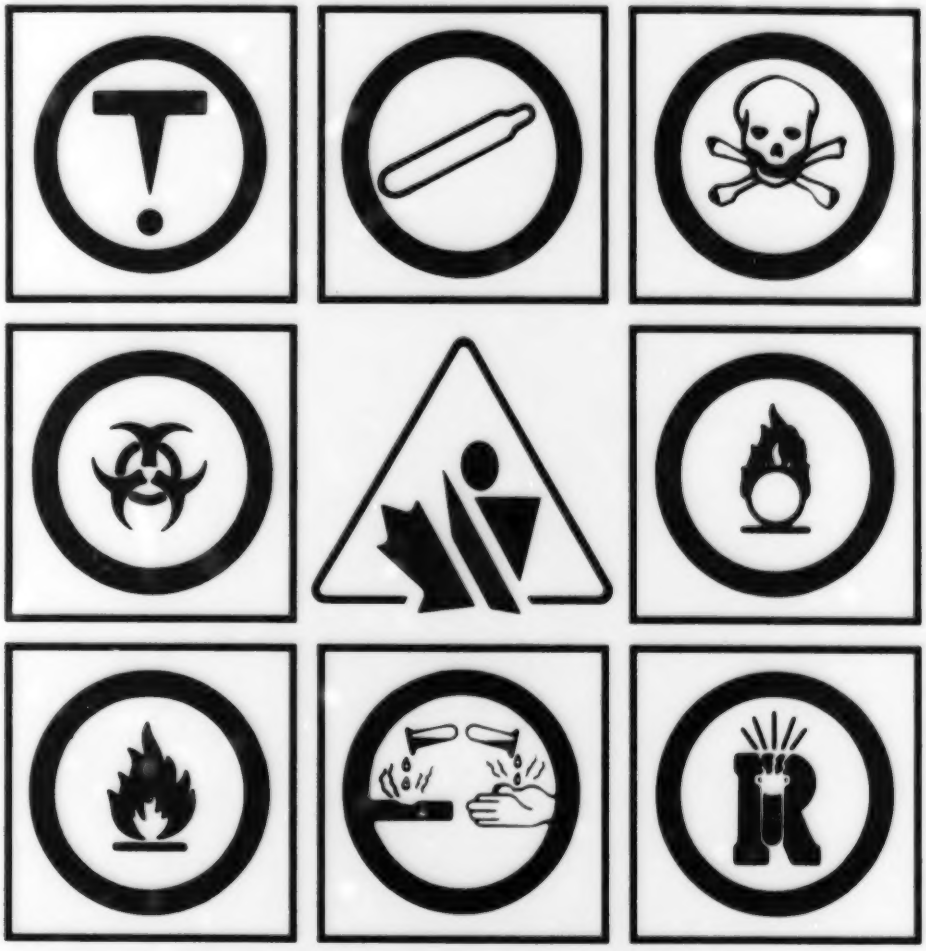
WHMIS
Information for Suppliers



Revised November 1999

Alberta
HUMAN RESOURCES
AND EMPLOYMENT

WORKPLACE HEALTH
AND SAFETY

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1.0 Introduction

WHMIS is the Workplace Hazardous Materials Information System. This hazard communication system deals with "controlled products" that are used at Canadian workplaces. WHMIS legislation charges suppliers and importers of these products with significant responsibilities. This booklet was developed to assist Alberta suppliers and importers to understand their WHMIS responsibilities and how to meet those responsibilities.

WHMIS was designed to ensure that workers and employers are provided with specific information to help them work more safely with controlled products. Workers are the ultimate beneficiaries. They are provided with detailed information regarding the physical, chemical, and toxicological properties of the controlled products they handle. They are also trained to apply that information to the work they do. This provides a better understanding of the potential hazards associated with their jobs and the best ways to control those hazards.

Employers receive the specified WHMIS information when they purchase controlled products from Canadian suppliers and importers. (For controlled products produced at the workplace, employers must develop the WHMIS information themselves.) Employers pass this information on to their workers and train them to understand and use it. Suppliers, including manufacturers, distributors, and importers provide WHMIS information to their industrial customers in the form of product labels and material safety data sheets (MSDSs).

WHMIS applies only to controlled products that are for sale to Canadian workplaces or that are imported for use in Canadian workplaces. Suppliers and importers of these products have the following important responsibilities under WHMIS:

- Classification to determine if their products are controlled products;
- Application of Supplier Labels to controlled products;
- Development of WHMIS MSDSs for controlled products; and
- Provision of this information to their customers.

Suppliers and importers also need to know about the arrangements for protecting confidential business information from disclosure on WHMIS labels and/or material safety data sheets.

This publication addresses suppliers' responsibilities in each of these four areas. It explains what must be done to meet each of the responsibilities and points to sources of assistance in areas where it might be needed.

2.0 Classification

There are six classes of controlled products in WHMIS. Two classes are sub-divided. Class B – Flammable and Combustible Materials has six divisions, and Class D – Poisonous and Infectious Materials, has three divisions. Divisions 1 and 2 of Class D are both subdivided into Very Toxic Material and Toxic Material. The six WHMIS classes, their divisions, and subdivisions, along with their hazard symbols, are shown in Figure 1.

WHMIS HAZARD CLASSES

A	Compressed Gas	
B	Flammable and Combustible Material 1. Flammable Gases 2. Flammable Liquids 3. Combustible Solids 4. Flammable Solids 5. Flammable Aerosols 6. Reactive Flammable Materials	
C	Oxidizing Material	
D	Poisonous and Infectious Material 1. Materials causing immediate and serious toxic effects 2. Materials causing other toxic effects 3. Biohazardous infectious materials	
E	Corrosive Material	
F	Dangerously Reactive Material	

Figure 1. The WHMIS Classes, Divisions and Subdivisions, and the Hazard Symbols

Classification is the process of determining if a product falls into one or more of the six WHMIS classes of controlled products. All controlled products which are sold to, imported into, or used at Canadian workplaces, except a few specifically excluded groups, are subject to the WHMIS law.

2.1 Excluded Products

There are two groups of excluded products. Products in the first group are excluded from all aspects of WHMIS. Products in the second group are excluded from the supplier aspects only. *Suppliers do not have WHMIS supplier responsibilities for products in either of these two groups.*

2.2 Products Excluded From All Aspects of WHMIS

Products that are excluded from all aspects of WHMIS are:

- Wood and products made of wood;
- Tobacco and products made of tobacco;
- Dangerous goods while in transport;
- Manufactured articles; and
- Hazardous wastes.

Products made of wood and products made of tobacco do not include products made "from wood" and products made "from tobacco". For example, lumber, which is made *of* wood, and cigarettes, which are made *of* tobacco, are excluded from WHMIS by this exemption. On the other hand, turpentine, which is made *from* wood, and nicotine which is extracted *from* tobacco, are not exempt from WHMIS.

Dangerous goods while in transport means, for WHMIS purposes, controlled products that are being shipped under the *Transportation of Dangerous Goods Control Act*.

Manufactured article means a product that is manufactured to a specific shape and whose function depends on that shape. Manufactured articles do not release controlled products during normal use. Coated pipe is an example of a product that is exempted from WHMIS by this provision. The coating material may have been a controlled product when it was applied, but it is not released during normal use of the pipe. Welding rods, on the other hand, are not exempted by this provision because they release controlled products (as part of the welding fume) during their normal use.

Note: The release of controlled products during the installation of a material does not prohibit its exemption from WHMIS by the "manufactured article" provision. New carpet, for example, usually releases certain gases during installation and for a short time afterward. But installation is not "normal use". Carpet is considered a manufactured article and is totally exempt from WHMIS.

Hazardous waste means, for WHMIS purposes, controlled products that are intended for disposal or that are sold for recycling or recovery.

2.3 Products Excluded From the Supplier Aspects of WHMIS Only

Products that are excluded from the supplier aspect of WHMIS only are:

- Explosives covered by the *Explosives Act*;
- Cosmetics, devices, foods, and drugs covered by the *Food and Drug Act*;
- Pesticides and herbicides covered by the *Pest Control Products Act*;
- Radioactive materials covered by the *Atomic Energy Control Act*; and
- Consumer products that are restricted products covered by the *Hazardous Products Act* (HPA). See Appendix 1 for legislation information.

Consumer product means a restricted product (see Glossary) that is packaged in quantities appropriate for use by the consuming public, available to the public in retail outlets, and labelled with the restricted product labelling required by the Consumer Chemicals and Containers Regulation made under the HPA. For example, a solvent that is packaged in a 250 ml container, labelled with a restricted product label, and offered for sale in a hardware store is considered a consumer product. The WHMIS consumer product exemption applies, and the supplier does not have any WHMIS responsibilities to meet. Yet the same product in a 454 litre drum, sold at an industrial supply outlet, is not permitted this exemption. If its properties meet the criteria for one or more of the WHMIS classes, it is considered a controlled product and all the WHMIS requirements apply.

Information requirements for these partially excluded products were addressed by the *Explosive Act*, the *Food and Drug Act*, etc., long before WHMIS was developed. These laws are currently being reviewed to ensure that their information requirements are at least as stringent as those of WHMIS. If this is found not to be the case, the situation will be corrected. The individual laws will be amended to tighten the information transfer requirements or the products will be brought into WHMIS so that users will receive hazard information that meets the WHMIS standard.

Appendix 2 contains a "Pre-Classification" flowchart that can be used to decide if the product is excluded from the supplier aspects of WHMIS.

2.4 *Classification of Non-Excluded Products*

Unfortunately there is no list of controlled products. Products that are not specifically excluded must be compared with the WHMIS criteria to determine if they are controlled products. Specific properties of the products in question must be compared with *all* of the WHMIS criteria to determine each of the classes, divisions, and subdivisions to which the product belongs.

Criteria for the six classes of controlled products are found in sections 33 to 66 of the Controlled Products Regulations. These criteria are illustrated in the form of flowcharts in Appendix 3.

Classification consists of three steps:

(1) Assembly of the required information about the product to be classified;

(2) Conversion of the units in which the product information is expressed to the units in which the criteria are expressed; and

(3) Comparison of the product data to the WHMIS criteria to determine all the classes to which the product belongs.

2.5 *Assembly of Product Data*

This is the process of assembling product data that corresponds to the criteria for each class, division, and subdivision. The required information, along with reference to sources of that information for pure substances, are listed in Section 2.8 of this booklet.

The most useful data is that which has been obtained by testing the product. If the product has been tested, use as much of that information as is applicable. If the product has not been tested, but it is a pure chemical, the necessary data can often be obtained from reference books and journals.

The situation is more complex if the product is an untested mixture. Such products should be tested to determine the required physical and chemical properties. Toxicological testing however is not required as toxicological properties can often be inferred. This is done by obtaining the results of testing that has been conducted on similar products and the product's ingredients, and having that data evaluated by an appropriate professional to extrapolate the required information. Appendix 4 gives guidance on the use of professional judgement.

There is one further complication to this process. Most of the WHMIS criteria are accompanied by a specific test method. Testing that is done for the purposes of WHMIS classification should, of course, be conducted according to the specific test method stated in the regulation. If the product data which is available has been obtained by some other method, both the method and the data should be considered by an appropriate occupational health and safety professional to determine the applicability of the product data for comparison with the WHMIS criteria.

2.6 *Conversion of Data Units to Those of the Criteria*

The assembled data must be converted to the same units as those of the criteria. Appendix 5 gives equations for performing the conversions that might be needed.

2.7. *Comparison of Product Data with the Criteria and Decision About Classification*
(The flowcharts in Appendix 3 may be useful for this purpose.)

In many cases, this decision will be straightforward. Where the specific, required product data is available and has been successfully converted to the same units as the criterion values, the decision about whether or not the product data meets the criteria can be made without hesitation.

The situation may be more complicated if the product has not been tested for the specific WHMIS criterion, or has been tested by some method other than the one stated in the legislation. In this case, professional judgement must be used when making the final classification.

There are special rules for the classification of mixtures that have been tested to determine the required toxicological data. The resulting toxicological properties of the product's ingredients are used when making the WHMIS classification. If the product contains an ingredient that meets the WHMIS criteria for:

- germ cell mutagen;
- reproductive toxin;
- teratogen;
- embryotoxin;
- carcinogen; or
- respiratory tract sensitizer, and

is in a concentration of 0.1% or greater, the (whole) product takes on the classification of that ingredient (D2A). If the product contains an ingredient that meets the criteria for any of the other Class D subdivisions or the Class E criteria for skin corrosion or necrosis, and the ingredient is in a concentration of 1% or more, the product takes on the classification of that ingredient.

There is no quick and easy way to perform WHMIS classification, not even for the experts. However, in some situations there may be information available that points toward the appropriate classification. For example, if the product has been classified for Transportation of Dangerous Goods (TDG) purposes, the TDG classification can give very useful hints as to what the WHMIS classification should be. Appendix 6 compares the TDG classification with the WHMIS classification.

Importers of products from the U.S. may have access to information that is helpful in performing their WHMIS classification and developing their WHMIS MSDSs. The U.S. "Hazard Communication Standard" is comparable to (but not the same as) WHMIS. Importers of products from the United States still need to reclassify their products according to WHMIS criteria. WHMIS compliant MSDSs and labels then have to be developed for those products that are classified as controlled products.

2.8 Product Information Required for Classification

The following pages list information regarding pure substances that will be needed in order to perform a WHMIS classification. If the required information for the product is not available, then that information should be collected for all ingredients which are present in the product at greater than 0.1%. The most likely sources of this information are also provided. These references are intended only as a starting point. The conscientious professional will check all the original sources of test data wherever possible in order to obtain complete information. Complete citations for each of the references are given in Appendix 7. Once the information is collected, the decision trees provided in Appendix 3 can be used to determine the appropriate product classification.

2.8.1 Class A – Compressed Gases

Includes:

- Compressed gases;
- Dissolved gases; and
- Gases liquefied by compression or refrigeration.

Required Information	Where to Find the Information
Critical temperature	• For pure substances, CRC or Kirk-Othmer • For mixtures, physical laboratory testing
Absolute vapour pressure • at 50°C, for the gaseous state of the product • at 37.8°C, for the liquid state of the product	• For pure substances, CRC or Kirk-Othmer • For mixtures, physical laboratory testing
Absolute pressure in the cylinder or pressure vessel	• Vessel pressure gauge

2.8.2. Class B – Flammable and Combustible Materials

Required Information	Where to Find the Information
Whether or not product belongs to Class A	• WHMIS Classification
Lower Explosive Limit (LEL) or Lower Flammable Limit (LFL)	• For pure chemicals, CCOHS, CRC, Sax or Kirk-Othmer • For mixtures, physical laboratory testing
Upper Explosive Limit (UEL) or Upper Flammable Limit (UFL)	• For pure chemicals, CCOHS, CRC, Sax or Kirk-Othmer • For mixtures, physical laboratory testing
Viscosity	• For pure chemicals, CCOHS, CRC or Kirk-Othmer • For mixtures, physical laboratory testing
Flash Points	• For pure chemicals, CCOHS, CRC, Sax or Kirk-Othmer • For mixtures, physical laboratory testing
Whether or not solid product produces fire through friction or through heat retained from processing or manufacturing	• For pure substances, CCOHS, CRC, Sax or Kirk-Othmer, or experience • For mixtures, physical laboratory testing or experience
Whether or not the product can be ignited readily	• For pure substances, CCOHS, CRC, Sax or experience • For mixtures, physical laboratory testing or experience
If the product can be ignited readily, whether or not it burns so vigorously as to create a hazard	• For pure substances, CCOHS, CRC, Sax or experience • For mixtures, physical laboratory testing or experience
If the product ignites readily, its burning rate	• Physical laboratory testing
If the product belongs to TDG Class 4, Division 1	• Part III, TDG regulations

Required Information	Where to Find the Information
If packaged in an aerosol container, whether it yields flame projection or flashback	• Physical laboratory testing
If product is spontaneously combustible and liable to spontaneous heating under normal conditions of use	• For pure chemicals, CCOHS, CRC, Sax or Kirk-Othmer • For mixtures, physical laboratory testing
If product is spontaneously combustible and liable to heat in contact with air until it begins to burn	• For pure chemicals, CCOHS, CRC, Sax or Kirk-Othmer • For mixtures, physical laboratory testing
If the product emits a flammable gas on contact with water or water vapour	• For pure chemicals, CCOHS, CRC, Sax or Kirk-Othmer • For mixtures, physical laboratory testing
If the product becomes spontaneously combustible on contact with water or water vapour	• For pure chemicals, CCOHS, CRC, Sax or Kirk-Othmer • For mixtures, physical laboratory testing

2.8.3 Class C – Oxidizing Materials

Required Information	Where to find the Information
Whether the product causes the combustion of another material by yielding oxygen or any other oxidizing material	• For pure chemicals, CCOHS, CRC, Sax or Kirk-Othmer • For mixtures, physical laboratory testing
Whether the product contributes to the combustion of another material by yielding oxygen or any other oxidizing material	• For pure chemicals, CCOHS, CRC, Sax or Kirk-Othmer • For mixtures, physical laboratory testing
If the product is an organic peroxide	• For pure chemicals, CCOHS, CRC, Sax or Kirk-Othmer • For mixtures, physical laboratory testing

2.8.4 Class D – Poisonous and Infectious Materials

Required Information on Tested Products, or on Ingredients of Untested Products	Where to Find the Information
Whether the product is TDG Class 2, Division 4	• Part III, TDG regulations
LD_{50} (oral)	• For ingredients, Sax, RTECS, or journal articles • For tested mixtures, results of toxicological testing
LD_{50} (dermal)	• For ingredients, Sax, RTECS, or journal articles • For tested mixtures, results of toxicological testing
LC_{50}	• For ingredients, Sax, RTECS, or journal articles • For tested mixtures, results of toxicological testing
Saturated vapour concentration at normal atmospheric pressure	• For ingredients, CCOHS, CRC, or Kirk-Othmer • For tested mixtures, results of physical laboratory testing

Required Information on Tested Products, or on Ingredients of Untested Products	Where to Find the Information
If the product belongs to TDG Class 2, Division 3	• Part III, TDG regulations
If the product belongs to TDG Class 6, Division 1 and if so, which Packing Group	• Part III, TDG regulations
Subchronic dose (oral) at which life is threatened or serious permanent impairment occurs in a statistically significant proportion of the population of test animals	• For ingredients, Sax, RTECS, or journal articles • Fort tested mixtures, results of toxicological testing
Chronic dose (oral) at which life is threatened or serious permanent impairment occurs in a statistically significant proportion of the population of test animals (or of humans)	• For ingredients, Sax, RTECS, or journal articles • Fort tested mixtures, results of toxicological testing
Subchronic dose (dermal) at which life is threatened or serious permanent impairment occurs in a statistically significant proportion of the population of test animals	• For ingredients, Sax, RTECSD, or journal articles • For tested mixtures, results of toxicological testing
Chronic dose (dermal) at which life is threatened or serious permanent impairment occurs in a statistically significant proportion of the population of test animals (or of humans)	• For ingredients, Sax, RTECSD, or journal articles • For tested mixtures, results of toxicological testing
Subchronic dose (inhalation) at which life is threatened or serious permanent impairment occurs in a statistically significant proportion of the population of test animals	• For ingredients, Sax, RTECSD, or journal articles • For tested mixtures, results of toxicological testing
Chronic dose (inhalation) at which life is threatened or serious permanent impairment occurs in a statistically significant proportion of the population of test animals (or of humans)	• For ingredients, Sax, RTECSD, or journal articles • For tested mixtures, results of toxicological testing
If it damages the embryo or fetus in a statistically significant proportion of test animals, at a concentration that does not produce maternal toxicity	• For ingredients, Sax, Sheperd, RTECSD, or journal articles • For tested mixtures, results of toxicological testing

Required Information on Tested Products, or on Ingredients of Untested Products	Where to Find the Information
If it is included in sections A1a, A1b or A2 of Appendix A of the *Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment*	• ACGIH *Documentation of the Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment* (most recent edition)
If it is listed in Group 1 or 2 of the IARC *Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans*	• IARC (most recent edition)
If it causes sterility or other adverse effects on the reproductive capability of persons	• For ingredients, ACGIH, Barlow, RTECS, Sax, or journal articles • For tested mixtures, results of toxicological testing
If it causes sterility or other adverse effects on the reproductive capacity of test animals	• For ingredients, ACGIH, Barlow, RTECS, Sax, or journal articles • For tested mixtures, result of toxicological testing
If it causes respiratory tract sensitization in persons exposed at the workplace	• For ingredients, ACGIH, RTECS, Sax or journal articles • For tested mixtures, results of toxicological testing
If there is epidemiological evidence of a causal relation between it and heritable genetic effects in exposed humans	• For ingredients, ACGIH, RTECS, Sax or journal articles • For tested mixtures, results of toxicological testing
If, in *in vivo* testing on mammalian cells, there is evidence of mutations transferred to offspring	• For ingredients, ACGIH, RTECS, Sax or journal articles • For tested mixtures, results of toxicological testing
If, in *in vivo* testing on mammalian cells, there is evidence of chemical interaction with germ cell genetic material	• For ingredients, ACGIH, RTECS, Sax or journal articles • For tested mixtures, results of toxicological testing

Required Information on Tested Products, or on Ingredients of Untested Products	Where to Find the Information
If, in *in vivo* testing on mammalian cells, there is evidence of gene mutation in somatic cells	• For ingredients, ACGIH, RTECS, Sax or journal articles • For tested mixtures, results of toxicological testing
If, in *in vivo* testing on mammalian cells, there is evidence of chromosomal aberration in somatic cells	• For ingredients, ACGIH, RTECS, Sax or journal articles • For tested mixtures, results of toxicological testing
If it causes specified levels of erythema or edema in animal tests	• For ingredients, ACGIH, RTECS, Sax or journal articles • For tested mixtures, results of toxicological testing
If it causes specified levels of corneal or iris damage, or conjunctival swelling or redness in animal tests	• For ingredients, ACGIH, Grant, RTECS, Sax or journal articles • For tested mixtures, results of toxicological testing
If it causes irritation of skin, eyes, or respiratory tract in exposed persons	• For ingredients, ACGIH, Grant, RTECS, Sax or journal articles • For tested mixtures, results of toxicological testing
If it causes specified levels of skin sensitization in animal tests	• For ingredients, ACGIH, RTECS, Sax or journal articles • For tested mixtures, results of toxicological testing
If it is an organism that is known or reasonably believed to cause disease in humans or animals	• Risk Groups 2, 3, or 4 of Health Canada's Laboratory Biosafety Guidelines
If it is the toxin of an organism that is known or reasonably believed to cause disease in humans or animals	• Risk Groups 2, 3 or 4 of Health Canada's Laboratory Biosafety Guidelines

2.8.5 Class E – Corrosive Materials

Required Information on Tested Products, or on Ingredients of Untested Products	Where to Find the Information
Whether it corrodes SAE 1020 steel or 7075-T6 non-clad aluminum at a specific rate	• For pure chemicals, Sax or CCOHS • For mixtures, physical laboratory testing
If it is corrosive to skin	• For pure chemicals, Sax or CCOHS • For mixtures, physical laboratory testing
If it is TDG Class 8	• Part III, TDG regulations
If it is TDG Class 2, Division 4	• Part III, TDG regulations
If it causes visible necrosis of human skin	• For pure chemicals, Sax or CCOHS • For mixtures, physical laboratory testing

2.8.6 Class F – Dangerously Reactive Materials

Required Information	Where to Find the Information
If it undergoes vigorous polymerization	• For pure chemicals, Bretherick, CCOHS, Kirk-Othmer, Sax or Sittig • For mixtures, physical laboratory testing
If it undergoes vigorous decomposition	• For pure chemicals, Bretherick, CCOHS, Kirk-Othmer, Sax or Sittig • For mixtures, physical laboratory testing
If it undergoes vigorous condensation	• For pure chemicals, Bretherick, CCOHS, Kirk-Othmer, Sax or Sittig • For mixtures, physical laboratory testing
If it becomes self-reactive under conditions of shock	• For pure chemicals, Bretherick, CCOHS, Kirk-Othmer, Sax or Sittig • For mixtures, physical laboratory testing

Required Information	Where to Find the Information
If it becomes self-reactive under conditions of increased pressure	• For pure chemicals, Bretherick, CCOHS, Kirk-Othmer, Sax or Sittig • For mixtures, physical laboratory testing
If it becomes self-reactive under conditions of increased temperature	• For pure chemicals, Bretherick, CCOHS, Kirk-Othmer, Sax or Sittig • For mixtures, physical laboratory testing
If it reacts vigorously with water to release a gas with LC_{50} < 2,500 ppm (4 hours)	• For pure chemicals, Bretherick, CCOHS, Kirk-Othmer, Sax or Sittig • For mixtures, physical laboratory testing

3.0. Supplier Labels

Supplier labels are the WHMIS labels that suppliers and importers are required to attach to controlled products they sell or import for use in Canadian workplaces.

An example of the basic WHMIS supplier label is shown in Figure 2. It has seven required information elements. They are:

1. Product Identifier - the product's name or number.
2. Supplier Identifier - the name of the supplier.
3. Hazard Symbols - the hazard symbols that represent all of the classes, and in the case of Class D, all the divisions that are applicable to the product.
4. Risk Phrases - brief statement of the main hazards associated with the product and the major precautions to be taken against those hazards.
5. Precautionary Measures - brief statement of the main hazards associated with the product and the major precautions to be taken against those hazards.
6. First Aid Measures - the steps to be taken in case of acute exposure.
7. Reference to the MSDS - directs the product handler to that source for more detailed information about the product.

The label must be written in both French and English. The only acceptable alternative to this provision is the use of two, equally visible labels, one in French and one in English.

There is no specified format for the WHMIS supplier label except that the required information must be surrounded by the unique, slash-marked border. There is no size requirement either, but the label must be large enough to be easily legible. Finally, the label must be located on some area of the product where it can be readily seen.

3.1 Variations on the Basic Supplier Label

There are five situations where variations on the basic supplier label are permitted. They are:

(1) controlled products in certain small containers;

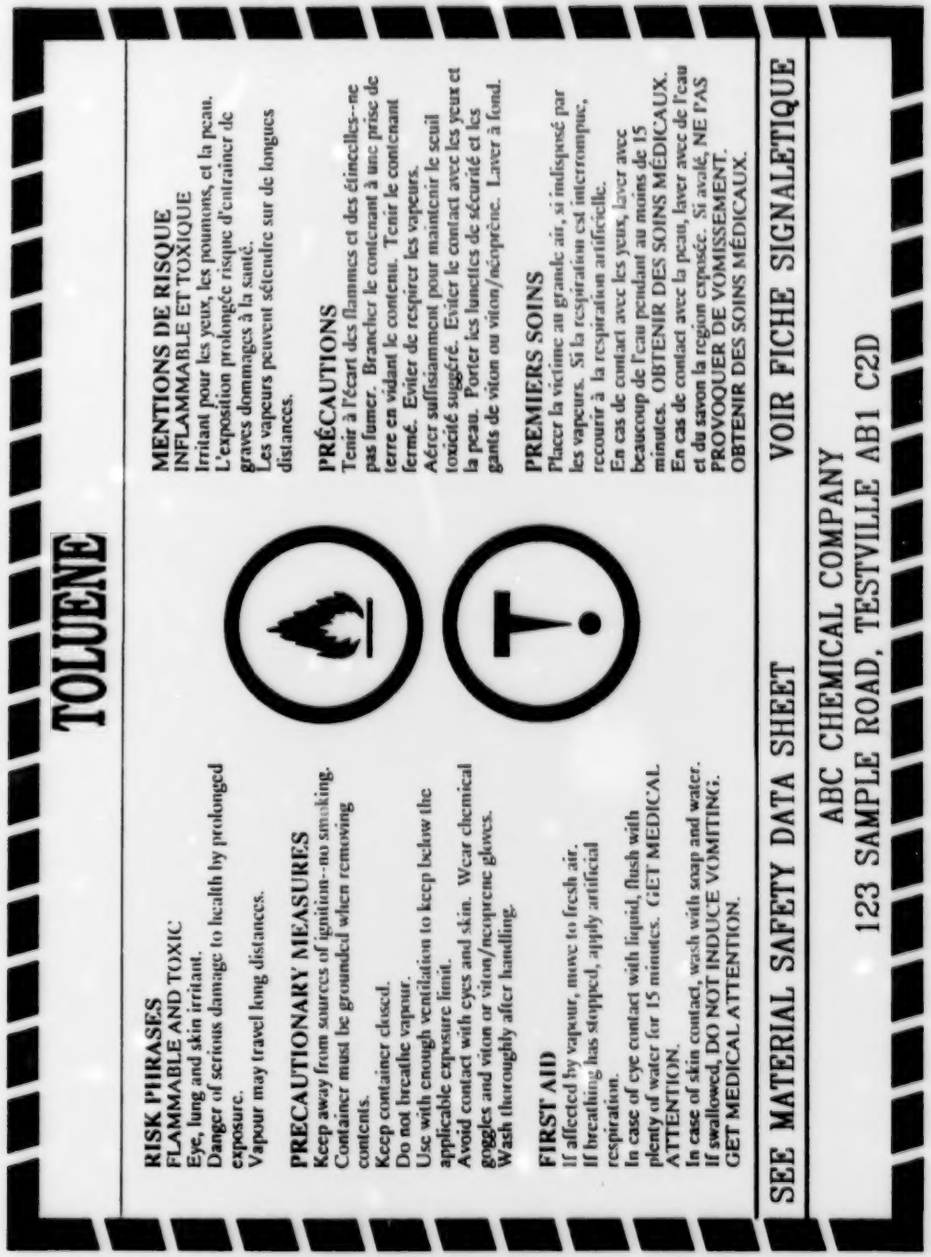
(2) controlled products sold in bulk shipments;

(3) certain controlled products sold by laboratory supply houses;

(4) samples sent to laboratories for analysis; and

(5) the label on compressed gas cylinders may have a curved shape to reduce distortion.

Figure 2. An example of a WHMIS Supplier Label



3.1.1 Small Container Labels

Controlled products in containers with a capacity of 100 ml or less may carry WHMIS supplier labels which do not have Hazard Statements, Precautionary Measures, or First Aid Measures. All of the other supplier label requirements apply. An example of a "Small Container Label" is shown in Figure 3.

Figure 3. An example of a WHMIS Small Container Label

3.1.2 Supplier Labels for Bulk Shipments

"Bulk shipment" has a special meaning in WHMIS. It is:

> *"....a shipment of a controlled product that is contained without intermediate containment or intermediate packaging, in*
> *(a) a vessel with a water capacity of more than 454 litres,*
> *(b) a freight container, a road vehicle, a railway vehicle, a portable tank, a freight container carried on a road vehicle, railway vehicle, ship or aircraft, or a portable tank carried on a road vehicle, railway vehicle, ship or aircraft,*
> *(c) the hold of a ship,*
> *(d) or a pipeline." [SOR/88-66,Section 2(2)]*

Supplier labelling for bulk shipments of controlled products may be done in any one of three ways:

(1) as a regular supplier label, which is sent to the customer with the product or in advance of the product's delivery;

(2) on the product's MSDS, which has been modified to include all the supplier label information as well as information required on the basic WHMIS MSDS; or

(3) as separate documentation.

3.1.3 Controlled Products Sold by Laboratory Supply Houses

Suppliers and importers of controlled products that are:

- from laboratory supply houses,
- intended for use in laboratories, and
- packed in quantities of 10 kg or less

may label these products in any one of three ways. They may use:

(1) basic supplier labels;

(2) labels that contain all the information required on basic WHMIS MSDSs, in which case they are not required to provide separate MSDSs to the customer; or

(3) basic supplier labels from which the WHMIS border, the hazard symbols, and the supplier identifier have been omitted.

Note: These variations are not applicable to laboratory samples.

3.1.4 Samples for Analysis at a Laboratory

There are two points about the application of WHMIS to samples being sent for analysis that might not be immediately apparent.

First, persons who send samples of controlled products to commercial laboratories for analysis are considered to be suppliers of controlled products. As a result, they have the WHMIS supplier responsibilities for these materials.

Second, sometimes it isn't possible to determine if the sample is a controlled product or not! Samples may be sent for analysis to determine if the product meets one or more of the

WHMIS classification criteria. If you find yourself faced with this dilemma, you are expected to make your best judgement as to whether the material is a controlled product and then treat it accordingly.

Samples that are sent to an outside laboratory should, in general, have a basic supplier label and be accompanied by a WHMIS MSDS. However, this is not possible if the product's properties haven't yet been determined. This is the case with a sample of a newly developed product before it has been thoroughly evaluated. Such a sample (if it is less than 10 kg) may still be sent to the laboratory even though an MSDS cannot accompany it. These special samples must be labelled with the following information:

- sample identifier;
- identity of the ingredients in the sample which are themselves controlled products;
- name of the person sending the sample; and
- the statement: "Hazardous Laboratory Sample. For hazard information – or in an emergency call", followed by an emergency telephone number for the person sending the sample.

This label does not require the cross-hatched border. An example is shown in Figure 4.

SAMPLE FOR ANALYSIS

Sample number: **203**
Contents: Toluene, xylene, water

Name of person sending sample: John Ranchman
Hazardous Laboratory Sample
For hazard information, or in an emergency, call:
(780) 297-4034
(emergency telephone number)

Figure 4. An example of a supplier label for a laboratory sample of a product for which an MSDS cannot be developed.

3.1.5 Compressed Gas Cylinders

An example of the curve-shaped label used on compressed gas cylinders is shown in Figure 4a.

Figure 4a. An example of the label shape used for compressed gas cylinders

4.0 Material Safety Data Sheets (MSDSs)

MSDSs contain information that is more technical than the information on WHMIS labels. MSDSs are a major source of detailed information on a product's properties, its major hazards, and the basic measures to be taken to protect against those hazards. Suppliers and importers are required to develop MSDSs for controlled products they sell, distribute or import for use at Canadian workplaces.

Suppliers must provide a current (no more than three years old) WHMIS MSDS to their customers at the time of the first sale of a controlled product to that customer, and with every sale after a change in the MSDS. In this way every customer is supplied with an MSDS that is current at the time of product purchase. The MSDS must be in the customer's choice of French or English, and it must be provided to the customer with the product or prior to the product reaching the customer.

The requirements for WHMIS MSDS development fall into four general categories; content, format, language, and revision. Specified information must be included if it is available and applicable to the product. The format is very flexible; there are only a few specific requirements. The MSDS must be prepared in both official languages of Canada – English and French. The MSDS must be updated whenever new information becomes available, or every three years, whichever comes first. An example of a WHMIS MSDS is shown in Figure 5.

4.1 MSDS Content

Nine categories of information are required on the WHMIS MSDS and specific information is required in each category if it is available and if it is applicable to the product. Each of the categories and the information required is discussed below.

4.1.1 Hazardous Ingredients

The MSDS must list all ingredients that are:

- Teratogens, embryotoxins, carcinogens, reproductive toxins, respiratory tract sensitizers and mutagens (according to the WHMIS classification critieria), which are present in the product at 0.1% or more;
- Any controlled products that are present in the product at 1% or more;
- On the Ingredient Disclosure List (see Appendix 1 for explanation) and present in the product at a concentration greater than the cut-off concentration specified on the list;
- Chemicals for which no toxicological testing has been performed; and
- Chemicals that the supplier has reason to believe may be harmful to any person.

Exemptions may apply if the identity of the ingredient is considered to be "confidential business information", as defined by WHMIS. See "Confidential Business Information" in Section 5.0 of this booklet.

MATERIAL SAFETY DATA SHEET

SECTION 1 — PRODUCT IDENTIFICATION AND USE

PRODUCT IDENTIFIER ▶			PRODUCT IDENTIFICATION NUMBER (PIN)
PRODUCT USE ▶			
MANUFACTURER'S NAME		SUPPLIER'S NAME	
STREET ADDRESS		STREET ADDRESS	
CITY	PROVINCE	CITY	PROVINCE
POSTAL CODE	EMERGENCY TELEPHONE NO.	POSTAL CODE	EMERGENCY TELEPHONE NO.

SECTION 2 — HAZARDOUS INGREDIENTS

HAZARDOUS INGREDIENTS	%	CAS NUMBER	LD_{50} OF INGREDIENT (SPECIFY SPECIES AND ROUTE)	LC_{50} OF INGREDIENT (SPECIFY SPECIES)

SECTION 3 — PHYSICAL DATA

PHYSICAL STATE	ODOUR AND APPEARANCE			ODOUR THRESHOLD (ppm)
VAPOUR PRESSURE (mm Hg)	VAPOUR DENSITY (AIR=1)	EVAPORATION RATE	BOILING POINT(°C)	FREEZING POINT(°C)
pH	SPECIFIC GRAVITY	COEFF. WATER/OIL DIST.		

SECTION 4 — FIRE AND EXPLOSION DATA

FLAMMABILITY YES ❑ NO ❑ IF YES, UNDER WHICH CONDITIONS? ▶		
MEANS OF EXTINCTION		
FLASHPOINT (°C) AND METHOD	UPPER FLAMMABLE LIMIT (% BY VOLUME)	LOWER FLAMMABLE LIMIT (% BY VOLUME)
AUTOIGNITION TEMPERATURE (°C)	HAZARDOUS COMBUSTION PRODUCTS	
EXPLOSION DATA ▶ SENSITIVITY TO IMPACT	SENSITIVITY TO STATIC DISCHARGE	

SECTION 5 — REACTIVITY DATA

CHEMICAL STABILITY YES ❑ NO ❑ IF NO, UNDER WHICH CONDITIONS? ▶	
INCOMPATIBILITY WITH OTHER SUBSTANCES YES ❑ NO ❑ IF SO, WHICH ONES? ▶	
REACTIVITY AND UNDER WHAT CONDITIONS	
HAZARDOUS DECOMPOSITION PRODUCTS	

Figure 5. An example of a WHMIS Material Safety Data Sheet.

PRODUCT IDENTIFIER ▶

SECTION 6 — TOXICOLOGICAL PROPERTIES

ROUTE OF ENTRY

SKIN CONTACT ❑ SKIN ABSORPTION ❑ EYE CONTACT ❑ INHALATION ❑ INGESTION ❑

EFFECTS OF ACUTE EXPOSURE TO PRODUCT

EFFECTS OF CHRONIC EXPOSURE TO PRODUCT

EXPOSURE LIMITS	IRRITANCY OF PRODUCT	SENSITIZATION TO PRODUCT	CARCINOGENICITY
TERATOGENICITY	REPRODUCTIVE TOXICITY	MUTAGENICITY	SYNERGISTIC PRODUCTS

SECTION 7 — PREVENTIVE MEASURES

PERSONAL PROTECTIVE EQUIPMENT:

GLOVES (SPECIFY)	RESPIRATOR (SPECIFY)	EYE (SPECIFY)
FOOTWEAR (SPECIFY	CLOTHING (SPECIFY)	OTHER (SPECIFY)

ENGINEERING CONTROLS (SPECIFY, E.G. VENTILATION, ENCLOSED PROCESS)

LEAK AND SPILL PROCEDURE

WASTE DISPOSAL

HANDLING PROCEDURES AND EQUIPMENT

STORAGE REQUIREMENTS

SPECIAL SHIPPING INFORMATION

SECTION 8 — FIRST AID MEASURES

SPECIFIC MEASURES

SECTION 9 — PREPARATION DATE OF MSDS

PREPARED BY (GROUP DEPARTMENT, ETC.)	PHONE NUMBER	DATE

Figure 5. An example of a WHMIS Material Safety Data Sheet.

The MSDS must provide specific information for each ingredient.

Required Information	Where to Find the Information
Concentration, unless that information is deemed confidential business information (see Section 5.0)	• Product formulation
Chemical Abstracts Service (CAS) Registry Number	• CCOHS, CRC, RTECS, Sax
Product identification number (PIN)	• TDG Regulations, Canutec
LD_{50} (species and route)	• Sax, RTECS, or journal articles
LC_{50} (species and route)	• Sax, RTECS, or journal articles

Complex mixtures, such as crude oil, Varsol, or ore, and flavours and fragrances, are treated as a single substance even though they consist of a number of chemicals. Their separate components need not be specified on the MSDS. Complex mixtures need only be identified by their common generic name.

If the actual concentration of the ingredient(s) varies significantly from batch to batch of the product, concentration ranges may be used instead of exact concentrations. Allowable concentration ranges are specified in the regulations.

Generic MSDSs may be developed for groups of chemicals such as lines of paint that are very similar. The generic MSDS must include the names (or numbers) of all the products in the line. If there is a specific product with different hazards, this must be identified on the MSDS.

In the case of flavours and fragrances, the supplier must maintain documentation for the formulations. The MSDS must include a statement so that medical professionals can have access to the identity of the ingredients if needed for medical treatment or in an emergency. The telephone number of the place where this information is kept must be provided. This latter information must follow the name of the flavour or fragrance in the Hazardous Ingredients section of the MSDS, in brackets. The components of the flavour or fragrance must also be made available to an inspector if the information is needed for enforcement purposes.

Where the LD_{50} and LC_{50} of the whole product is available, it must be used in place of the LD_{50} and LC_{50} of the ingredients.

4.1.2 Preparation Information

Three items must be included in this section:

(1) the name of the person or group who developed the MSDS;

(2) the telephone number where that person or group can be reached; and

(3) the date on which the MSDS was prepared.

4.1.3 Product Information

Four items must be included in this section:

(1) product identifier;

(2) product use;

(3) manufacturer's name, address and emergency telephone number, an indication that information is being withheld because it is considered to be confidential business information; and

(4) supplier's name, address and emergency telephone number.

There are special provisions where product distributors are involved. If the product has been prepared and packaged for sale by a distributor, the distributor's name, address, and emergency telephone number may be used in place of information about the manufacturer. On the other hand, the distributor's (supplier's) name, address, and telephone number need not be included on the MSDS if the distributor buys the controlled product from another supplier for resale.

Information about the manufacturer may be omitted on the MSDS for controlled products imported for use (rather than sale) by the importer.

4.1.4 Physical Information

Specific information about the product is required.

Required Information	Where to Find the Information
Physical state	• Observation
Odour and appearance	• Observation
Odour threshold	• For pure substances, Billings (1981)
Specific gravity	• For pure substances, CCOHS, CRC, Sax
Vapour pressure	• For pure substances, CCOHS, CRC, Sax
Vapour density	• For pure substances, CCOHS, CRC, Sax
Evaporation rate	• For pure substances, CCOHS, CRC, Sax
Boiling point	• For pure substances, CCOHS, CRC, Sax
Freezing point	• For pure substances, CCOHS, CRC, Sax
pH	• For pure substances, CCOHS, CRC, Sax
Coefficient of water/oil distribution	• For pure substances, CCOHS, CRC, Sax

4.1.5 Fire or Explosion Hazard

Specific information about the product is required.

Required Information	Where to Find the Information
Conditions of flammability	• Physical laboratory testing, observation • For pure substances, CCOHS, CRC, Sax
Means of extinction	• Physical laboratory testing, observation • For pure substances, CCOHS, CRC, Sax
Flash point and method of determination	• For pure substances, CCOHS, CRC, Sax
Upper flammable (explosive) limit	• For pure substances, CCOHS, CRC, Sax
Lower flammable (explosive) limit	• For pure substances, CCOHS, CRC, Sax
Auto-ignition temperature	• For pure substances, CCOHS, CRC, Sax
Hazardous combustion products	• For pure substances, CCOHS, CRC, Sax
Explosion data – sensitivity to mechanical impact	• For pure substances, CCOHS, CRC, Sax
Explosion data – sensitivity to static discharge	• For pure substances, CCOHS, CRC, Sax

4.1.6 Reactivity Data

Specific information about the product is required.

Required Information	Where to Find the Information
Conditions of instability	• Physical laboratory testing, observation • For pure substances, CCOHS, CRC, Sax
Substances with which the product is incompatible	• For pure substances, Bretherick, CCOHS, CRC, Sax, Sittig
Conditions of reactivity	• For pure substances, Bretherick, CCOHS, CRC, Sax, Sittig
Hazardous decomposition products	• For pure substances, Bretherick, CCOHS, CRC, Sax, Sittig

4.1.7 Toxicological Properties

Specific information about the product is required.

Required Information	Where to Find the Information
Route of entry	• For pure substance, CCOHS, Clayton and Clayton , Doull, Sax • For mixtures, professional judgement
Effects of acute exposure	• For pure substances, ACGIH, CCOHS, Clayton and Clayton, Doull, Sax
Effects of chronic exposure	• For pure substances, ACGIH, CCOHS, Clayton and Clayton, Doull, Sax
Exposure limits	• Chemical Hazards Regulation, ACGIH
Irritancy of product	• For pure substances, ACGIH, CCOHS, Clayton and Clayton, Doull, Sax

Required Information	Where to Find the Information
Sensitizing properties	• For pure substances, ACGIH, CCOHS, Clayton and Clayton, Doull, Sax
Carcinogenicity	• For pure substances, ACGIH, CCOHS, Clayton and Clayton, Doull, IARC
Reproductive toxicity	• For pure substances, ACGIH, Barlow, CCOHS, Clayton and Clayton, Doull, Sax
Teratogenicity	• For pure substances, ACGIH, CCOHS, Clayton and Clayton, Doull, Sax, Shephard
Mutagenicity	• For pure substances, ACGIH, CCOHS, Clayton and Clayton, Doull, Sax
Toxicologically synergistic products	• For pure substances, ACGIH, CCOHS, Clayton and Clayton, Doull, Sax

4.1.8 Preventive Measures

Specific information about the product is required.

Required Information	Where to Find the Information
Personal protective equipment	• For pure substances, ACGIH, CCOHS, CSA, Sittig
Engineering controls	• CCOHS, Professional judgement
Spill/leak procedures	• Bretherick, Canutec, CCOHS
Waste disposal	• Armour et al, Bretherick, Canutec, CCOHS
Handling procedures/equipment	• Armour et al, Bretherick, CCOHS

Required Information	Where to Find the Information
Storage requirements	• Armour et al, Bretherick, CCOHS
Shipping Information	• Armour et al, Bretherick, CCOHS

4.1.9 First Aid Measures

Specific first aid measures for acute exposures is required.

4.2 Other Information

The MSDS must also include any other hazard information of which the supplier is aware or ought reasonably to be aware.

Disclaimers should not be used on WHMIS MSDSs and are forbidden from directly or indirectly refuting information contained on the MSDS. Where information from different sources appears to be contradictory, all of the information must be given equal weight.

4.3 Format

There are no specific format requirements for WHMIS MSDSs. Writers may use any format they choose so long as the required information is included. The WHMIS label border is not required either. Headings must be the same as, or very similar to, those specified in the previous section.

If confidential business information has been withheld from a supplier label or MSDS, this fact must be clearly indicated. The secret information must be replaced with a registry number and the date on which the claim was filed (or the date when the information was validated as secret.)

4.4 Language

The supplier MSDS must be written in both French and English. It must be available in both languages so that is may be provided promptly in whichever of the two Canadian official languages the customer requests. If the customer does not specify which language they prefer, the supplier should send the MSDS in whichever of those languages both usually communicate.

4.5 Revision of the MSDS

MSDSs must be up-to-date. Suppliers must update an MSDS whenever they become aware of new information that causes the current one to be outdated, or every three years, whichever comes first. The updated MSDS must be sent with each subsequent sale of the product to individual customers.

4.6 Sixteen (16) Heading Format for MSDSs

An MSDS that uses the ISO, ILO, ECC, or ANSI sixteen (16) heading format is also acceptable as long as all of the required information is provided. Under the Regulatory Information heading the following statement should be provided: *"This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations."*

The 16-heading format requires inclusion of the following information:

(1) Chemical Product and Company Information
(2) Composition/Information on Ingredients
(3) Hazard Identification
(4) First Aid Measures
(5) Fire Fighting Measures
(6) Accidental Release Measures
(7) Handling and Storage
(8) Exposure Controls, Personal Protection
(9) Physical and Chemical Properties
(10) Stability and Reactivity
(11) Toxicological Information
(12) Ecological Information
(13) Disposal Considerations
(14) Transport Information
(15) Regulatory Information
(16) Other Information

Note: ISO = International Organization for Standardization
ILO = International Labour Organization
ECC = European Community Commission
ANSI = American National Standards Institute

5.0 Confidential Business Information

Confidential business information is specific information that would otherwise have to be revealed on a WHMIS label or MSDS. It is a company secret that is financially valuable to the company. Genuine confidential business information may be withheld from disclosure on WHMIS labels and MSDSs.

Suppliers may withhold:

- the identity or concentration of one or more ingredients of a controlled product; or

- the name of toxicological studies which would identify those ingredients, if this information is genuine confidential business information.

Employers may withhold the same information as suppliers. They may also withhold the product identifier or information that identifies the supplier, if it is genuine confidential business information. For example, the product may be a secret ingredient in an important product that the company produces, or it may be a catalyst in a chemical reaction which occurs along the production line. The employer may need to keep this information secret even though the supplier of the product has no particular need to do so.

Only certain specific information qualifies as confidential business information. And even this specific information may be withheld from disclosure only when certain conditions are met i.e., only if it is validated as WHMIS confidential business information. Hazard information can never be withheld from disclosure.

Employers wishing to withhold any of this information must file a claim with the Hazardous Materials Information Review Commission (HMIRC).

The following documentation must be submitted with a claim to the Commission:

- The secret information;

- Evidence that the information is confidential;

- The MSDS and/or label in the form in which the claimant wants to use it i.e., with the "confidential information" omitted but with all other required information included; and

- A filing fee.

Once received, staff at the HMIRC confidentially review the claim to determine its validity and to review the product's MSDS and/or label to ensure that the information is complete and accurate. Claimants are given a registry number when they submit their claims to the Commission. They are required to record this number and the date the claim was submitted on their label and/or MSDS in place of the withheld information.

If the claim is accepted, the claimant must indicate this fact on the label and/or MSDS, along with the registry number and the date the claim was validated. If the Commission decides that a claim is not valid, the claimant will be ordered to reveal the information they had applied to withhold, or to remove the product from the market.

Decisions of the Commission may be appealed to a tripartite appeals panel. This is the final step which may be taken in the effort to protect information from disclosure on WHMIS labels and/or MSDSs.

Suppliers and/or employers who have been granted an exemption from disclosure of confidential business information must reveal that information to a medical professional if the information is needed for diagnosis or treatment of a medical emergency. They must also reveal the information to government inspectors who need it to conduct investigations into the health and safety of workers at companies where the product is being used.

Persons who receive confidential business information under these circumstances are required to keep the information confidential. Anyone violating this requirement is subject to the same penalties as persons who violate the *Hazardous Products Act*.

6.0 Summary

Suppliers are also employers. Alberta suppliers and importers can learn about their "employer responsibilities" in a companion publication, *WHMIS: Information for Employers*. General information on the system is described in the booklet, *WHMIS: Information for Workers*. Both are available at Alberta Human Resources and Employment, Workplace Health and Safety offices throughout the province.

Appendix 1. Legislation

WHMIS has been implemented across Canada through coordinated federal, provincial and territorial legislation. Supplier responsibilities are specified in federal legislation. Employer and worker responsibilities are specified in provincial, territorial, and in the case of federal work sites, (federal) Human Resources and Development Canada (HRDC) legislation.

WHMIS supplier legislation applies to any Canadian company or individual who sells or imports controlled products for use at a workplace in Canada. It includes:

- The *Hazardous Protection Act*, and its regulation the *Controlled Products Regulations*;
- The *Ingredient Disclosure List*; and
- The *Hazardous Materials Information Review Act* and its regulation the *Hazardous Materials Information Review Regulation*.

The *Hazardous Products Act* (HPA) deals with the sale and import of various hazardous products.

The *Controlled Products Regulations* (CPR) contain details of the supplier's responsibilities. They include the criteria for classifying materials to determine if they are controlled products and the content and format requirements for WHMIS supplier labels and MSDSs.

The *Ingredient Disclosure List* (IDL) is a list of ingredients that must be disclosed on WHMIS MSDSs. Please note that the IDL is not a list of controlled products as there is no such list.

The *Hazardous Materials Information Review Act* (HMIRA) allows certain information (confidential business information) to be withheld from disclosure on WHMIS labels and/or MSDSs. It also establishes the Hazardous Materials Information Review Commission (HMIRC). The HMIRC, which is located in Ottawa, adjudicates suppliers' and employers' claims that specific information is confidential.

The *Hazardous Materials Information Review Regulation* (HMIRR) contains details of the HMIRA. It specifies the conditions under which certain information may be withheld from disclosure, the procedure for filing a claim with the Commission, and the fees involved.

Bill C-70 is the name of the federal bill that introduced the HPA amendment and the HMIRA to the House of Commons. After a bill is passed, it becomes inactive and the draft legislation it contains becomes law. Bill C-70 no longer exists, and the amended HPA and the HMIRA are Canadian law.

Effective Date

All of the WHMIS legislation is currently in effect. It was phased in over the period October 31, 1988 to March 15, 1990.

Violations

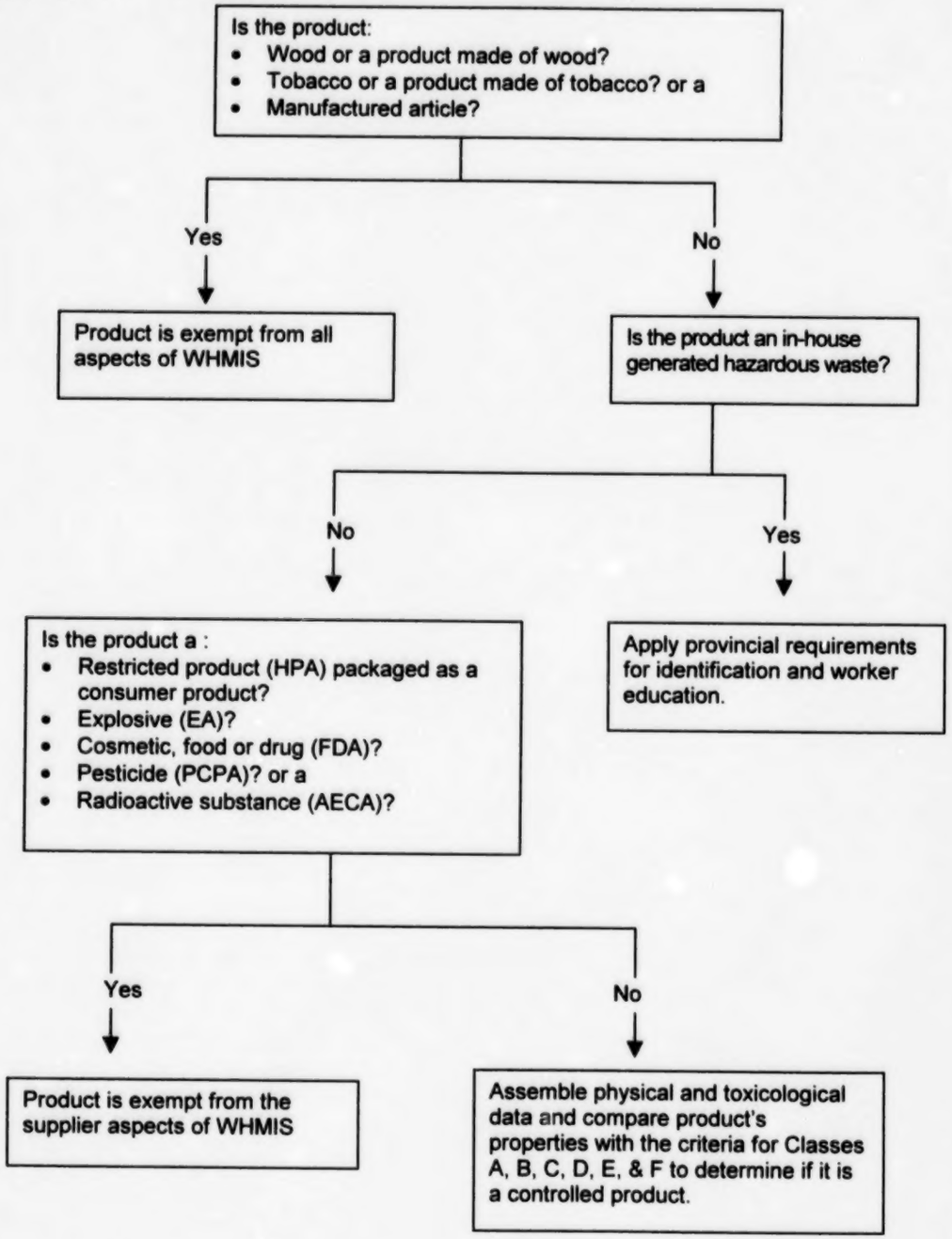
Violators of the federal WHMIS law are subject to seizure of violative products and/or prosecution. Prosecution may result in forfeiture of the products that are non-compliant, fines of up to $1,000,000.00, and/or imprisonment for up to two years.

Availability

Federal WHMIS legislation can be obtained from federal government publication outlets across Canada, or:

Supply and Services Canada
Canadian Government Publishing Centre
Ottawa, Ontario K1A 0S9
(819) 997-2560

Appendix 2. WHMIS Pre-Classification Flowchart



Appendix 3. Decision Trees for Product Inclusion

Figure A

Decision Tree: Criteria for Inclusion in Class A Compressed Gases
(Reference: CPR, Section 34)

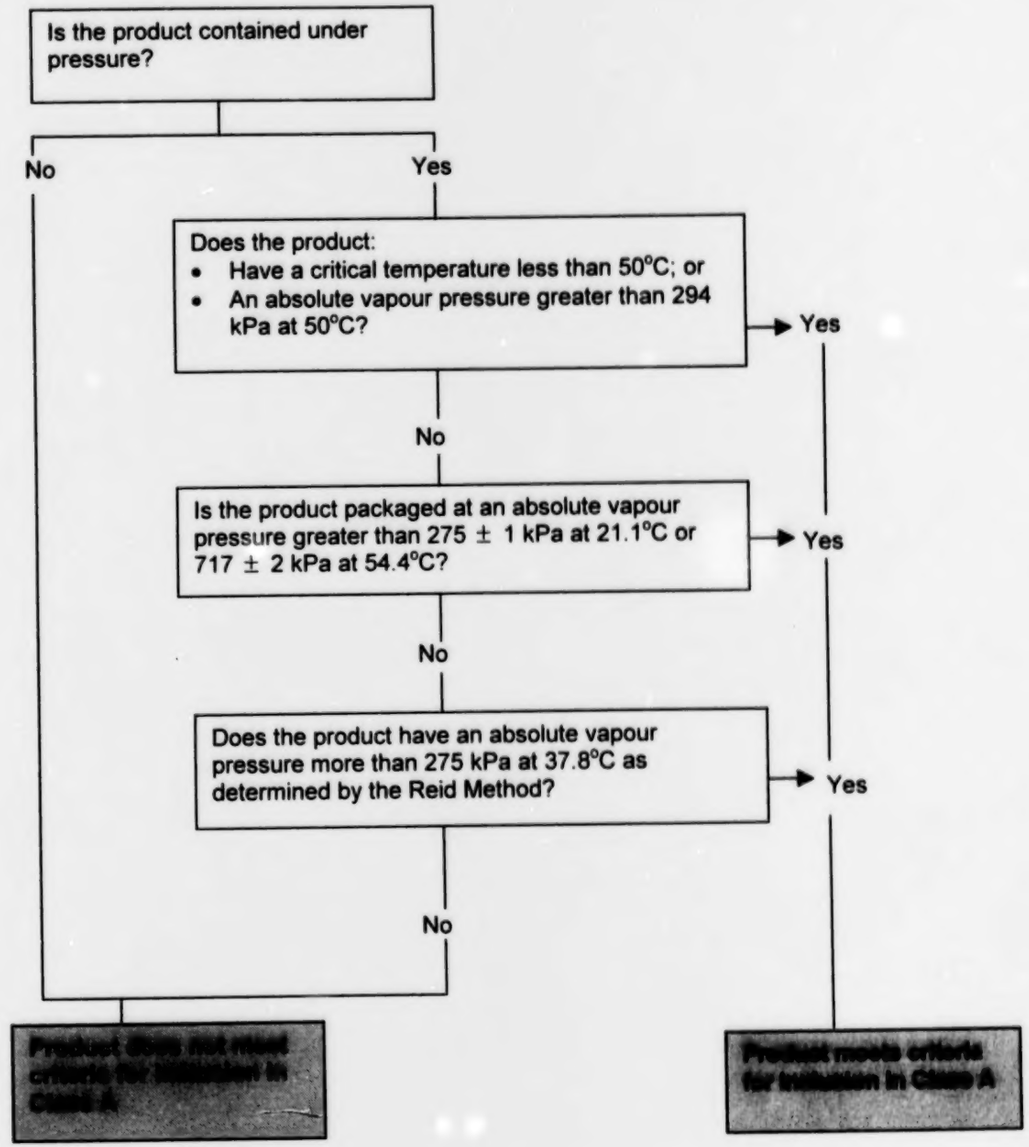


Figure B

Decision Tree: Criteria for Inclusion in Class B Flammable and Combustible Materials (Reference: CPR, Sections 35-41)

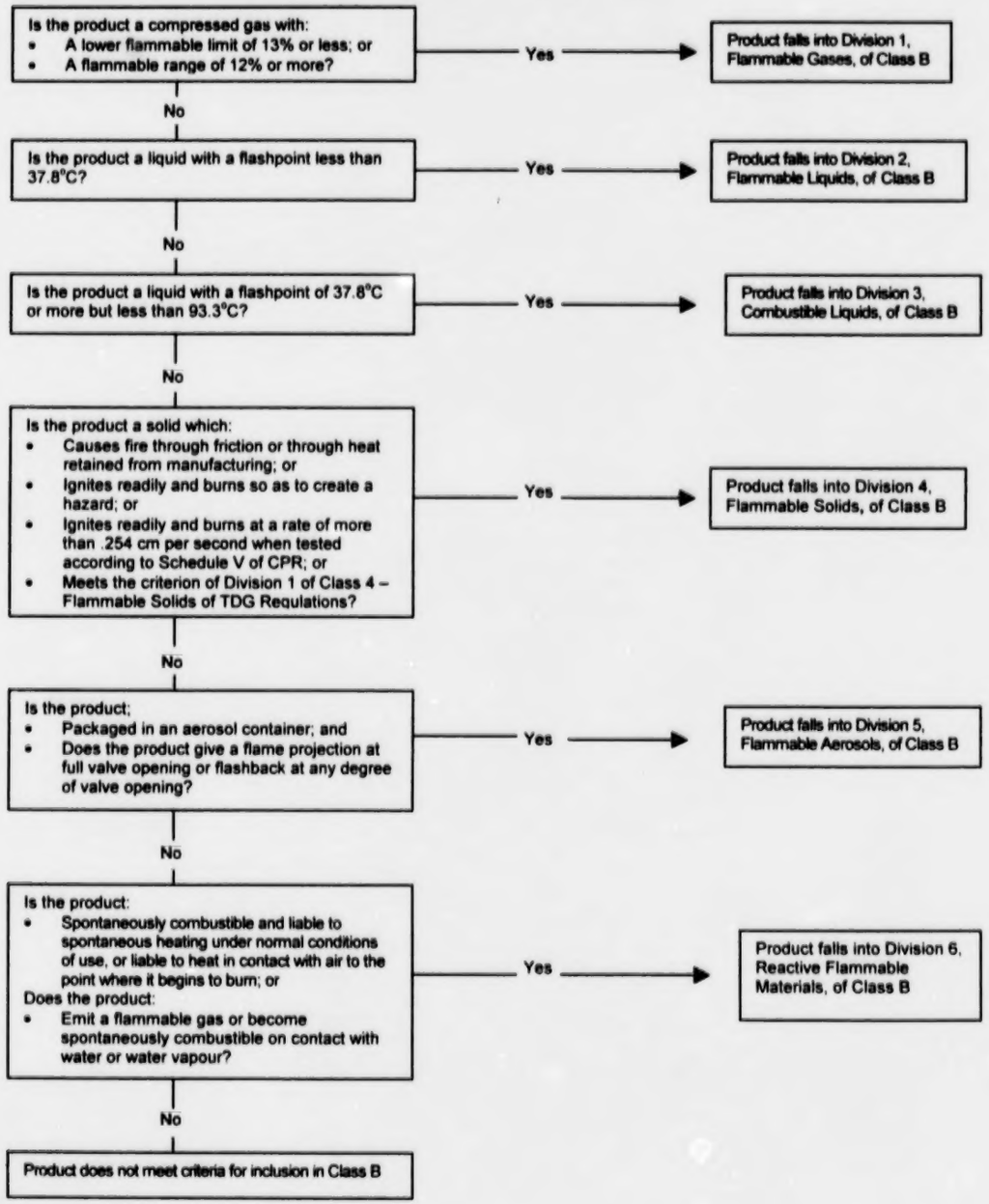


Figure C

Decision Tree: Criteria for Inclusion in Class C Oxidizing Materials (Reference: CPR, Section 42)

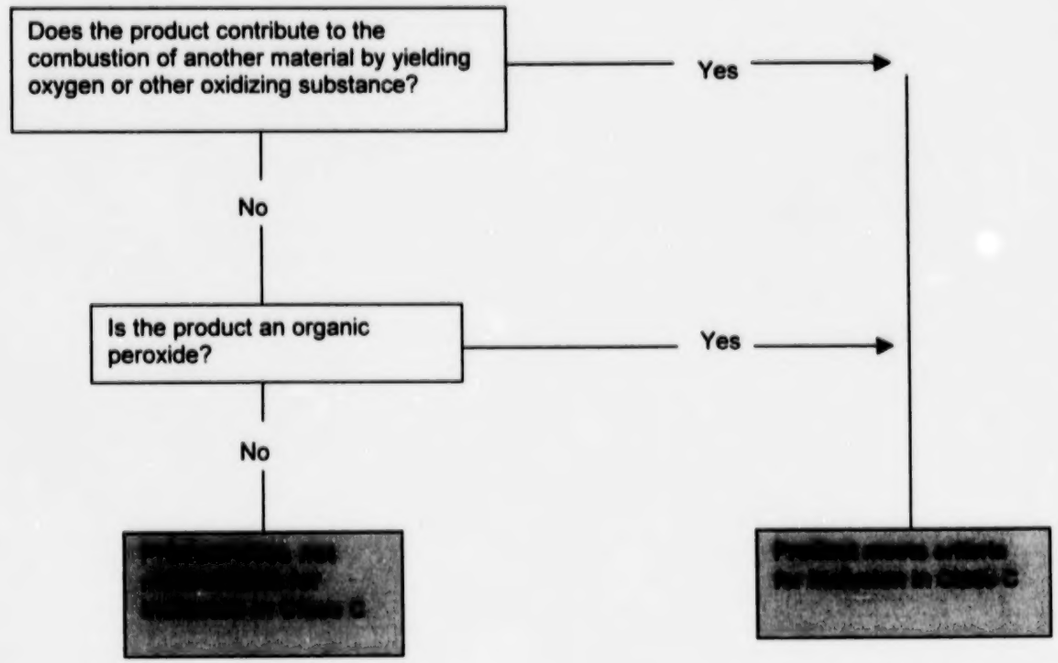


Figure D

Decision Tree: Criteria for Inclusion in Division 1,2 or 3 of Class D Poisonous and Infectious Materials (Reference: CPR, Sections 33, 43-64)

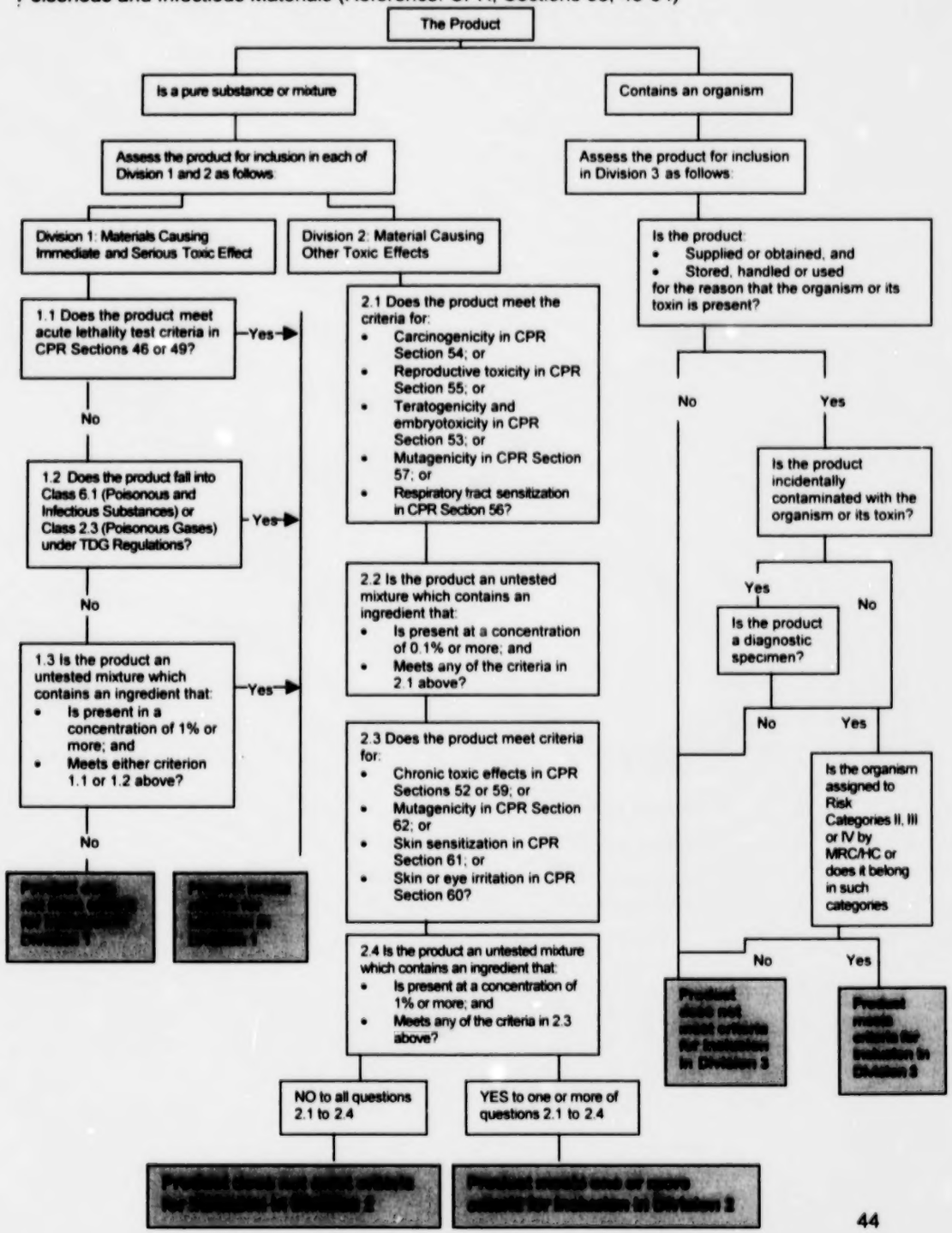


Figure E

Decision Tree; Criteria for Inclusion in Class E Corrosive Materials (Reference: CPR, Section 65)

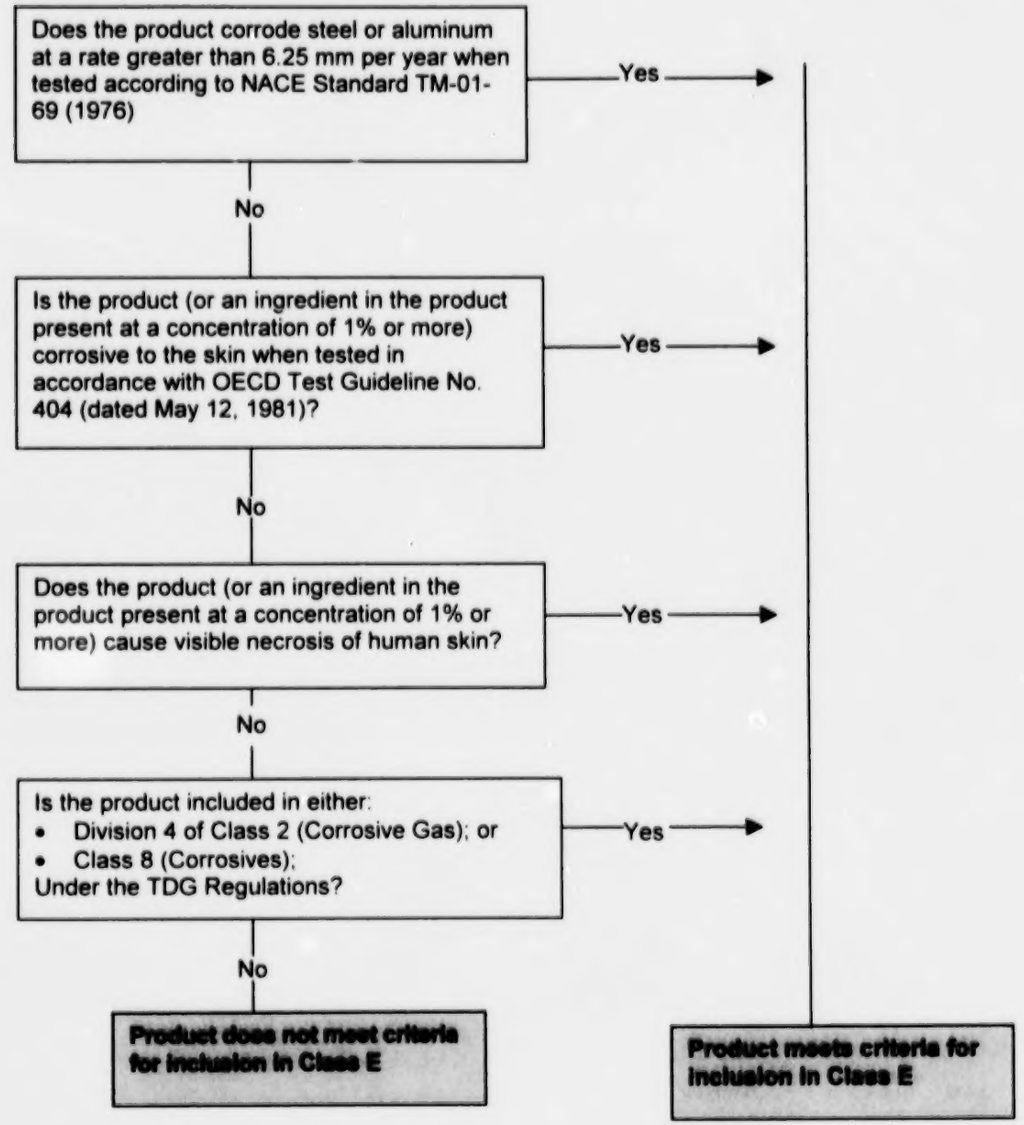
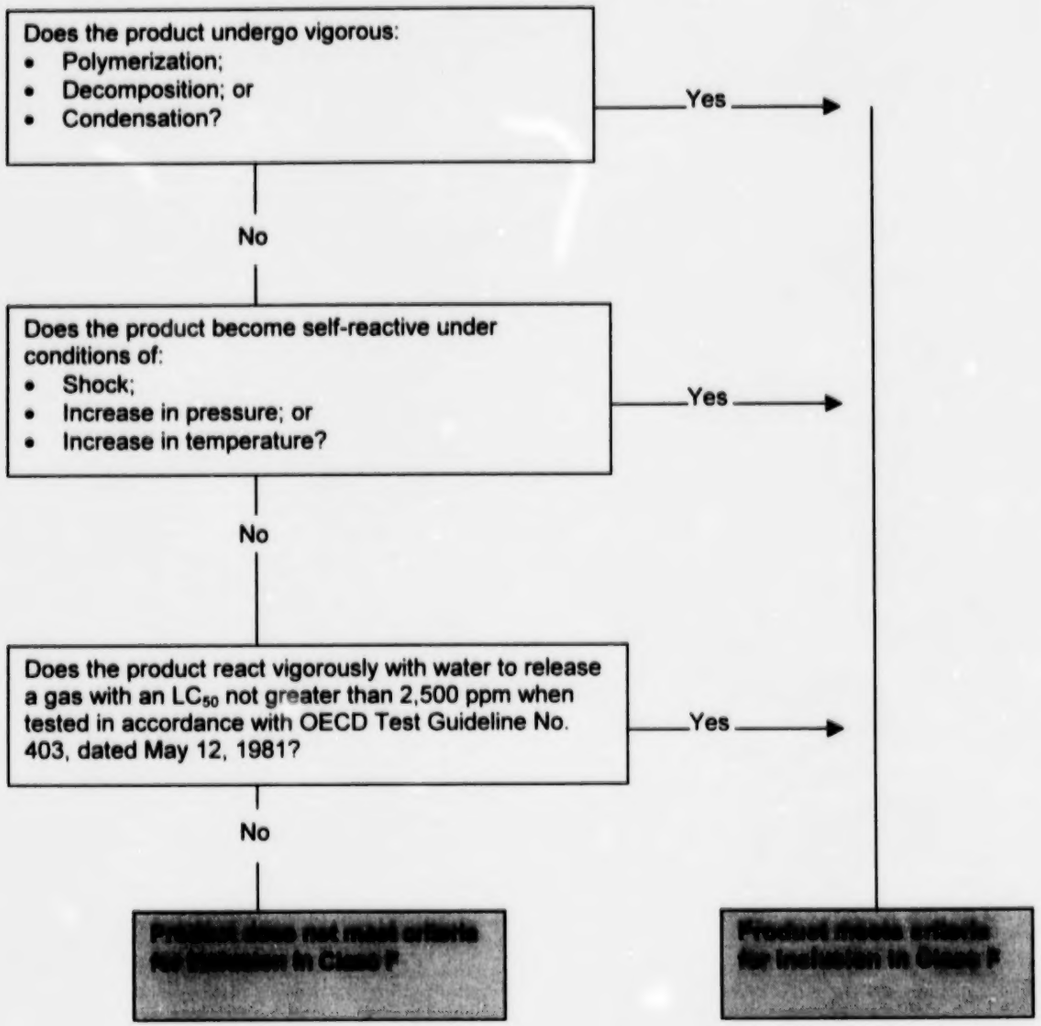


Figure F

Decision Tree: Criteria for Inclusion in Class F Dangerously Reactive Materials (Reference: CPR, Section 66)



Appendix 4. Use of Professional Judgement in the Classification of Controlled Substances Under WHMIS

A supplier who intends to sell or import a product for use in a workplace in Canada must classify their product to decide if it is a WHMIS controlled product and therefore subject to WHMIS requirements. In classifying a product the supplier must consider all of the criteria listed in Part IV of the Controlled Products Regulations (CPR). Prior to classifying a product the supplier may want to consider if the product is exempt from WHMIS requirements under section 12 of the *Hazardous Products Act*.

The extent to which professional judgement is used by the supplier depends on the specific criteria being considered. Because of this, the discussion of professional judgement will focus on these criteria.

1.0 Non-toxicological Criteria that Define the Limits for a Measurable Product Property when Subjected to a Specific Test Method
Includes CPR sections: 34(d), 37, 38, 39(c), 40, 65(a).

A hierarchical approach to the consideration of test results should be used. The approach is described below and shown in flow chart format in Figure G.

(a) Use the results of product tests performed in accordance with the specified test methods (either by conducting the test or using available test results). Professional judgement may be required to interpret results where, for example, there are varying test results for a product that has been subjected to the same specified test method.

(b) In the absence of test results referred to in (a), use product test results from relevant but non-specified test methods. Professional judgement must be used with these results to classify the product.

(c) In the absence of test results referred to in (a) or (b), where appropriate, extrapolate test results on a product with similar properties to classify the product. Professional judgement must be used to carry out such an extrapolation.

(d) In the absence of being able to classify a product by steps (a), (b), or (c) above, a supplier must recognize that if the supplier sells the product and has classified it as not meeting the criterion and the product does in fact meet the criterion, the supplier will be in violation of the law.

2.0 Toxicological Criteria that Define the Limits for a Measurable Product Subjected to a Specific Test Method

Includes CPR sections: 46, 49, 52, 53, 55(b), 57(1)(b), 59, 60, 61(a), 62, 65(b), 66(c).

A supplier must use a hierarchical approach to the consideration of test results as shown in steps (a) to (d) below or the approach shown in (e) below. Both of these approaches are summarized in flow chart format in Figure H.

(a) Use the results of product tests performed in accordance with the specified test methods (either by conducting the test or using available test results). Professional judgement may be required to interpret results where, for example, there are varying test results for a product that has been subjected to the same specified test method.

(b) In the absence of test results referred to in (a), use product test results from relevant but non-specified test methods. Professional judgement must be used with these results to classify the product. Examples of relevant test methods are given in CPR paragraph 33(3)(b).

(c) In the absence of test results referred to in (a) or (b), where appropriate, extrapolate test results on a product with similar properties to classify the product. Professional judgement must be used to carry out such an extrapolation. (Although suppliers are not obligated to do so, they are encouraged to make use of available quantitative structure – activity relationship (QSAR) systems to estimate the toxic effects of chemicals. Professional judgement is required to assess the value of such estimates.)

(d) For Class D criteria, if it is not possible to classify a product by steps (a), (b), or (c), a supplier is not required to undertake toxicological testing. The product can be considered as not meeting a Class D criterion if the supplier has no "information of which the supplier is aware or ought reasonably to be aware". Every supplier "ought reasonably to be aware" of appropriate published literature. The Canadian Centre for Occupational Health and Safety (CCOHS) is one organization capable of conducting a comprehensive literature search. When additional information is made available to the supplier by appropriate regulatory agencies, industry or trade association(s), or labour organization(s), the supplier is expected to evaluate that information.

or

(e) For Class D criteria, a supplier may use an alternate strategy *in place of* steps (a) to (d) above. A supplier may undertake a search of information he "ought reasonably to be aware of" (as in (d) above). If the supplier finds "sufficient" human data to show that the product meets or does not meet a criterion, the supplier may use this information to classify the product. Professional judgement must be used in making an assessment of what is "sufficient" in each case, taking into account animal test results.

3.0 Criteria That Define the Limits for a Measurable Property or Qualitative Characteristic of a Product Without Specifying a Test Method

Includes CPR sections: 34(a)(b)(c), 36, 39(a)(b), 41, 42, 66(a)(b)(c).

None of these CPR criteria relate to Class D and therefore the supplier must use the direction provided in CPR subsection 33(1)(b).

For the above criteria other than sections 39(b) and 66(a)(c), the use of professional judgement in classification is addressed in 1.0(b) and 1.0(c) above.

For sections 39(b) and 66(a)(c), it is clear that professional judgement must be used to decide if the qualitative criteria properly describe the product's properties.

4.0 Criteria Which State That "There is Evidence" of a Physiological Effect, Without Specifying a Test Method

Includes CPR sections: 55(a), 56, 57(1)(a), 61(b), 64, 65(e).

The supplier must use professional judgement to decide if test results or studies on the product signify "evidence of an effect". This includes giving consideration to the particulars of the test method or study and the relevance of the results or conclusions to the occupational situation. There is nothing in the CPR to prevent a supplier from over-classifying a product.

Where the supplier finds "evidence" that the product meets a criterion and also finds "evidence" to the contrary, the supplier must consider the product as meeting the criterion for the purpose of classification. The supplier may make reference to the contrary evidence on the MSDS, but such disclosure must be made in accordance with the qualifications referred to in section 13 of the CPR.

Where a supplier cannot find test results, conclusions from a study, or other evidence on the product for one of these criteria, the supplier is not required to test the product but may assume, for the purposes of classification, that the product does not meet that criterion.

5.0 Criteria for Carcinogenicity – CPR section 54

There is no opportunity to use professional judgement in the classification of carcinogens when the substance or tested mixture is included in the referenced lists. The WHMIS criteria for carcinogens apply only to products or substances, not to processes listed by IARC or ACGIH, such as "antimony trioxide production" or "manufacture of magenta."

Where a substance or tested mixture does not appear on the referenced list and the supplier has information to show that the product may be a carcinogen, the supplier should use professional judgement to decide if the product should be classified as carcinogenic. While it is required that such information be disclosed on a product's MSDS, a classification of the product as carcinogenic is not required by WHMIS legislation.

6.0 Criteria That Refer to Transportation of Dangerous Goods (TDG) Regulations Criteria

Includes CPR sections: 39(d), 47, 50, 65(c)(d).

The referenced TDG criteria are of the type referred to in 3.0 above or, in the case of section 65, of the type referred to in 4.0 above. The same appropriate rules for the use of professional judgement apply to these criteria.

In addition to containing scientific criteria, the TDG Regulations contain a list of specified dangerous goods in Schedule II with designated primary classifications. If a product is listed in Schedule II of the TDG Regulations as meeting one of the referenced TDG criteria, the supplier cannot use professional judgement to decide that the product does not meet that criterion.

Suppliers should be cautious when reading the TDG classification in Schedule II. TDG prioritizes the hazards and only lists the most severe hazards in Schedule II. Thus, when assessing a product against a particular TDG criterion, a supplier should first refer to the Schedule II list, and where the product is not listed as meeting the criterion, also refer to the TDG criterion in the TDG Regulations before concluding the product does not meet the criterion.

7.0 Criteria for Ingredients in a Product That is an Untested Mixture

Includes CPR sections: 48, 51, 58, 63, 65(f).

The same rules for use of professional judgement that applied when deciding if a tested product meets a criterion will apply when deciding if an ingredient is a controlled product.

Note: WHMIS legislation does not prohibit a supplier from including a product in any WHMIS class, division or subdivision even though it does not strictly meet the hazard criteria in the CPR. However, suppliers should avoid including products that are clearly beyond the scope of the hazard criteria that define a class. Otherwise, the overall effectiveness of WHMIS in accurately warning workers of the hazards inherent in workplace products will be diminished.

If a supplier's product falls just outside the criteria which define any class, a supplier may use professional judgement to decide that the product should nonetheless be included in the class.

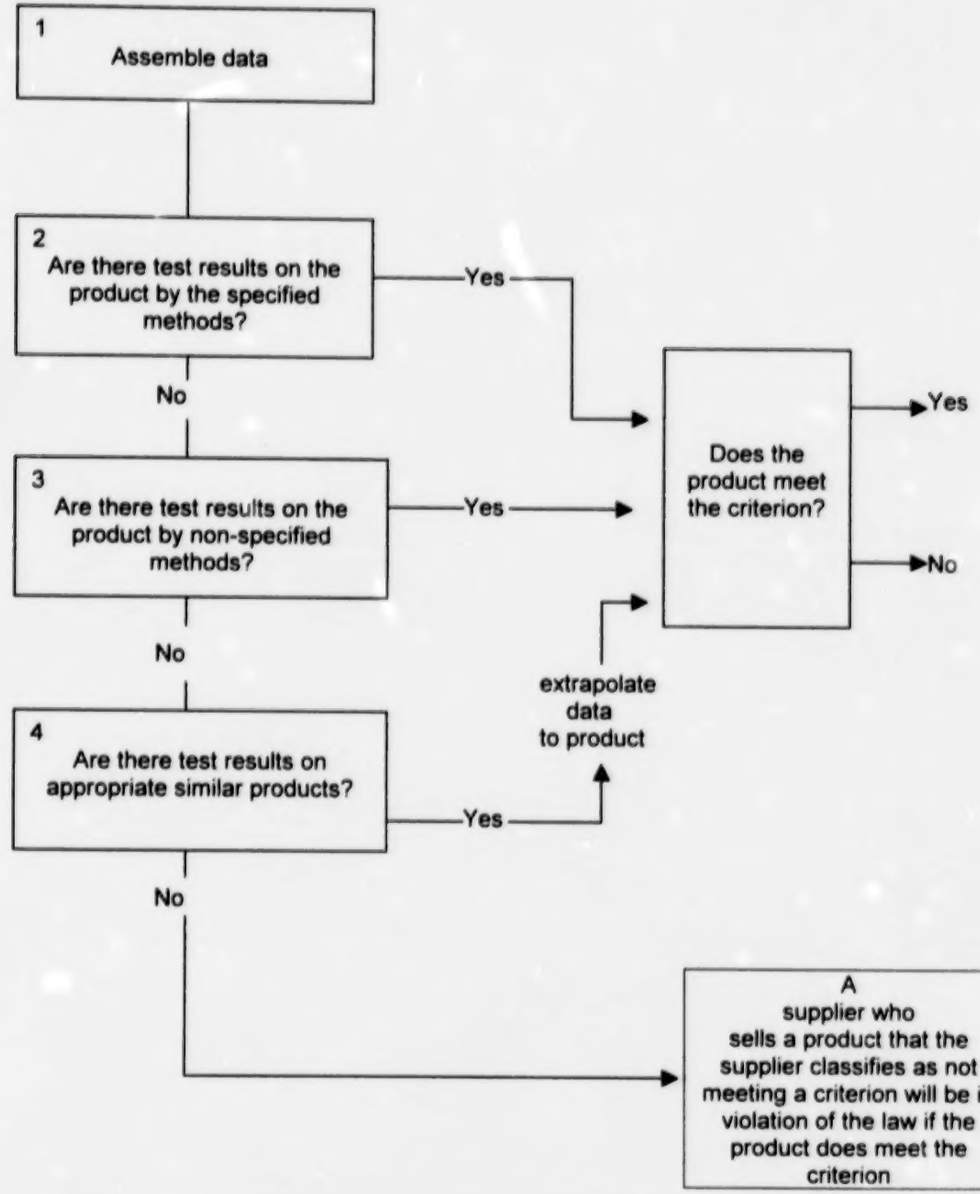


Figure G. Steps in the WHMIS classification of products against criteria, other than Class D, in the Controlled Products Regulations

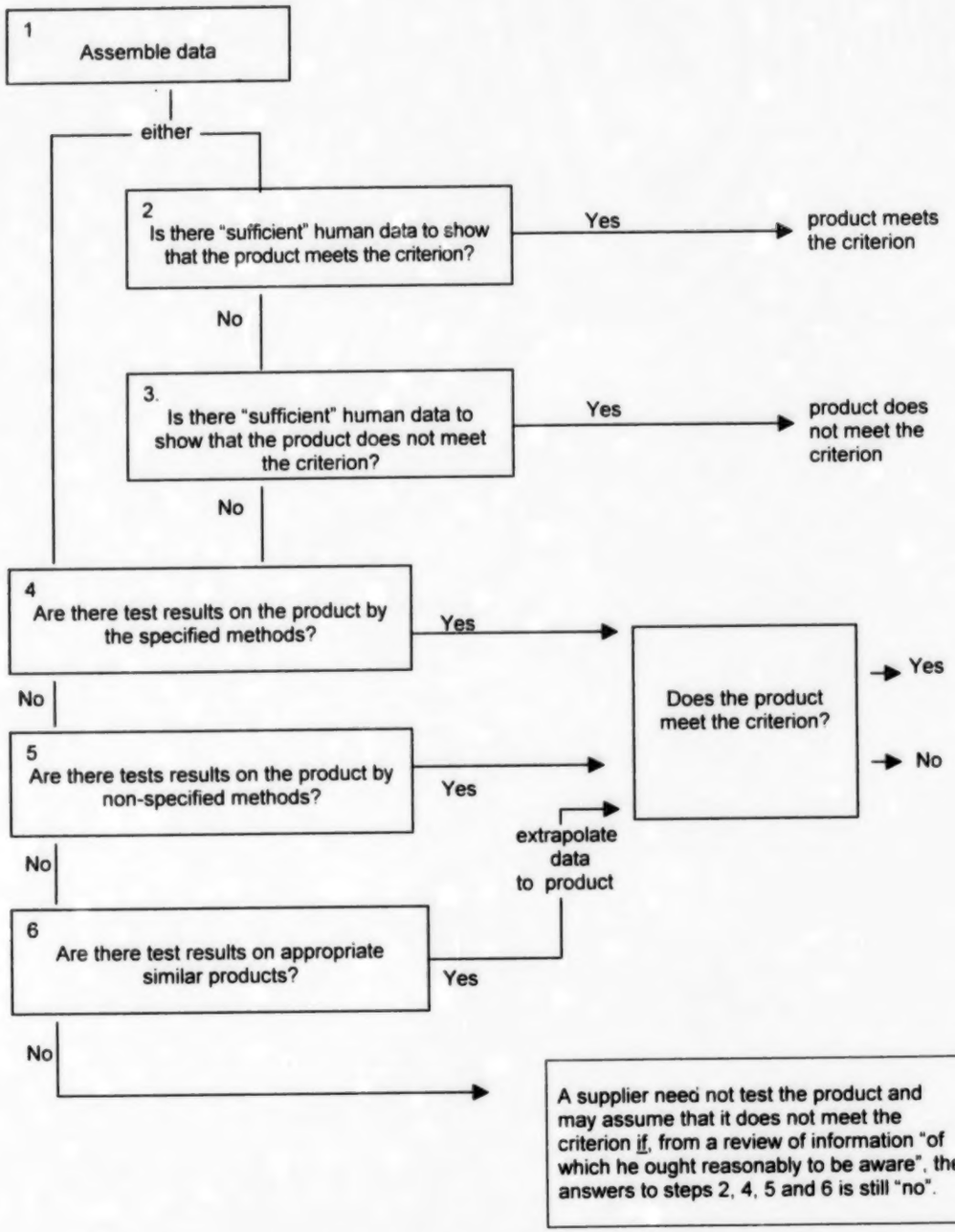


Figure H. Steps in the WHMIS classification of products against Class D criteria in the Controlled Product Regulations

Appendix 5. Conversions

Temperature

Celsius (C) = [F-32] ÷1.8

Fahrenheit (F) = [C x 1.8] + 32

Absolute Pressure = Gauge Pressure + Atmospheric Pressure

Pressure

Atmospheres (atm) = kPa ÷101.3
= psi ÷14.7

Kilopascals (kPa) = atm x 101.3
= psi x 0.145

Pounds per square inch (psi) = atm x 14.7
= kPa x 6.89

Viscosity

Saybolt Universal Seconds (SUS) = mm^2/s x 7.76

Square millimeters per second (mm^2/s) = SUS x 0.129

Acute and Chronic Toxicity

LC_{50} (for gases or vapours) at 4 hours = LC_{50} at Y hours x $\frac{(Y \text{ hours})^{1/2}}{2}$

where Y = actual number of hours exposure

LC_{50} (for dusts, mists, or fume) at 4 hours = LC_{50} at Y hours x $\frac{(Y \text{ hours})}{4}$

where Y = actual number of hours exposure

LD_{50} for an untested mixture of Solids or Liquids:

$$\frac{1}{LD_{50}\text{ of Mixture}} = \frac{\text{Proportion Of Ingredient A}}{LD_{50}\text{ of Ingredient A}} + \frac{\text{Proportion Of Ingredient B}}{LD_{50}\text{ of Ingredient B}} + \ldots + \frac{\text{Proportion Of last Ingredient}}{LD_{50}\text{ of last Ingredient}}$$

Notes: (1) Proportion = the weight of the ingredient ÷ the weight of the mixture

(2) Only ingredients that are present in the mixture at 1% or more are included in this calculation

LC_{50} for an untested mixture of Gases, Vapours, Dusts, or Mists:

$$\frac{1}{LC_{50}\text{ of Mixture}} = \frac{\text{Proportion Of Ingredient A}}{LC_{50}\text{ of Ingredient A}} + \frac{\text{Proportion Of Ingredient B}}{LC_{50}\text{ of Ingredient B}} + \ldots + \frac{\text{Proportion Of last Ingredient}}{LC_{50}\text{ of last Ingredient}}$$

Notes: (1) Proportion = the weight of the ingredient ÷ the weight of the mixture

(2) Only ingredients that are present in the mixture at 1% or more are included in this calculation

Appendix 6. Comparison of TDG and WHMIS Classifications

If the Product has this TDG Classification	It may belong to this WHMIS Classification	Comments
Class 1 **Explosives**	No comparable class	Suppliers have no WHMIS responsibilities as explosives are covered by the *Explosive Act*
Class 2 **Gases** Division 1	Class B, Division 1	Very similar criteria
Class 2 **Gases** Division 2	Class A	The TDG classification is broader.
Class 2 **Gases** Division 3	Class D, Division 1 Subdivision A	This TDG classification is one of the criteria for WHMIS Class D1A
Class 2 **Gases** Division 4	Class E	This TDG classification is one of the criteria for WHMIS Class E Note: Products with this TDG classification are specifically excluded from WHMIS Class D, Divisions 1 or 2.
Class 3 **Flammable Liquids** Divisions 1 and 2	Class B, Division 2	Comparable criteria
Class 3 **Flammable Liquids** Division 3	Class B, Divisions 2 and 3	Comparable criteria
Class 4 **Flammable Solids, etc.** Division 1	Class B, Divisions 4 and 6	Comparable criteria
Class 5 **Oxidizing Substances and Organic Peroxides**	Class C	Identical criteria
Class 6 **Poisonous (toxic) and Infectious Substances** Division 1	Class D, Division 1	Packing Groups I and II fall in WHMIS Class D1A; Packing Group III, WHMIS Class D1B

If the Product has this TDG Classification	It may belong to this WHMIS Classification	Comments
Class 7 **Radioactive Materials**	No comparable class	Suppliers have no WHMIS responsibilities for radioactive materials covered by the *Atomic Energy Control Act*
Class 8 **Corrosives**	Class E	This TDG classification is one of the criteria for WHMIS Class E
Class 9 **Miscellaneous Products or Substances**	Class D	Some Class 9 products are included in WHMIS Class D

Notes:

- TDG does not have a classification equivalent to WHMIS Class B, Division 5, or Class F.
- No guarantee is given that products that have been classified according to TDG as described in the first column of this table necessarily fall into the WHMIS classification indicated in the second column unless the Comments column indicates that the criteria are identical. This is because the two classification systems are not exactly equivalent (except where the Comments column indicates that the criteria are identical). The second column simply indicates WHMIS classifications into which the product is likely to fall. If, after checking, the supplier finds that a product with a given TDG classification does or does not fall into the WHMIS classification indicated in the second column, the supplier should not end their classification efforts. The supplier should still check the product's properties against the WHMIS criteria for that class.
- The supplier is also cautioned that the TDG classification of the product may not be correct. The full WHMIS classification should be performed.

Appendix 7. References

Books

Guides to understanding the legislation:

British Columbia Workers' Compensation Board (January 1991) *WHMIS Core Material Manual. A Resource Manual for the Application and Implementation of WHMIS*, Richmond, BC: Workers' Compensation Board of British Columbia.

Logan, Jeanette, E.C. (ed.) (1989) *WHMIS Compliance Manual*, Toronto: The Carswell Company.

Moser, Cindy (ed.) *The WHMIS Handbook* Toronto: Corpus.

Transportation of Dangerous Goods Act and Regulations. Consolidated Edition (1989) Calgary: Danatec Educational Services.

Sources for information needed for classification and for writing MSDSs:

Alberta Government. *Chemical Hazards Regulation* (AR 393/88) Alberta Government Publication Services.

Alberta Government. *Transportation of Dangerous Goods Act and Regulations* Alberta Government Publication Services.

American Conference of Governmental Industrial Hygienists: *Threshold Limit Values and Biological Exposure Indicies for (current year)* Cincinnati: ACGIH.

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Barlow, SM. And F.M. Sullivan (1982) *Reproductive Hazards of Industrial Chemicals: An Evaluation of Animal and Human Data.* New York: Academic Press.

Billings, Charles E. (1981) *Odor thresholds in air as compared to threshold limit values*, AIHAJ Vol. 42, No.6, p. 479.

Bretherick, L. (1985) *Handbook of Reactive Chemical Hazards: An Indexed Guide to Published Data (3rd ed)*, London: Butterworths.

Canadian Standards Association (1993) CSA Standard Z94.4-M1993 (R1997) *Selection, Care and Use of Respirators.* Rexdale: CSA

Canutec. *Dangerous Goods Guide to Initial Emergency Response (latest edition)* Ottawa: Transport Canada.

Clayton, George D. and Florence E. Clayton (latest edition). *Patty's Industrial Hygiene and Toxicology, Volume 2 Toxicology*. New York: John Wiley and Sons.

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Doull, et al. *Cassarett and Doull's Toxicology: The Basic Science of Poisons*. New York: MacMillan Publishing Co.

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Houston, A. (1983) *Dangerous Chemicals Emergency First Aid Guide* London: Wolters.

The International Technical Information Institute. (1986) *Toxic and Hazardous Industrial Chemicals Safety Manual for Handling and Disposal with Toxicity and Hazard Data*. Tokyo: ITII.

Kirk-Othmer Encyclopedia of Chemical Technology (latest edition) New York: John Wiley and Sons.

National Institute of Occupational Safety and Health. *Registry of Toxic Effects of Chemical Substances (latest edition and supplements)* Cincinnati: NIOSH.

Organization for Economic Co-operation and Development. *Guidelines for Testing of Chemicals (latest edition)* Brussels: OECD.

Sax, Irving et al (1989) *Dangerous Properties of Industrial Material (latest edition)* New York: Van Nostrand Reinhold.

Schwope, A.D. et al (latest edition) *Guidelines for the Selection of Chemical Protective Clothing*. Cincinnati: ACGIH.

Shephard, Thomas H. (1988) *Catalog of Teratogenic Agents (5th ed)* Baltimore: The John Hopkins University Press.

Sittig, Marshall (1985) *Handbook of Toxic and Hazardous Chemicals and Carcinogens (latest edition)* New Jersey: Noyes Publications.

World Health Organization (current edition) *IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Human* UK: WHO.

<u>For information on certain kinds of chemicals:</u>

The Agrochemicals Handbook (latest edition) Nottingham: The Royal Society of Chemistry.

Braker, W. and A.L. Mossman (latest edition) *Matheson Gas Data Book* Secaucus, New Jersey: Matheson Gas Products Inc.

Bretherick, L. *Hazards in the Chemical Laboratory (latest edition)* London: The Royal Society of Chemistry.

Farm Chemicals Handbook (1986) Willowby, Ohio: Meister Publishing Co.

Fiberg, L. et al. (1986) *Handbook f the Toxicology of Metals* Amsterdam: Elsevier

All of the publications are available on loan from:

Library
Alberta Human Resources and Employment
3rd Floor, 10808-99 Avenue
Edmonton, Alberta
T5K 0G5

and at other major occupational health and safety libraries.

Professional Assistance

Canadian Centre for Occupational Health and Safety (CCOHS)
250 Main Street
Hamilton, Ontario
L8N 1H6
Tel: 1-800-263-8276
Fax: (416) 572-2206

Consultants

Lists are available from Alberta Human Resources and Employment, Workplace Health and Safety offices.

Glossary

Absolute pressure is pressure measured with reference to a vacuum. It is the sum of the gauge pressure and the prevalent atmospheric pressure.

Acute exposure means a single exposure, or exposure over a short time.

Acute toxic effects (acute toxicity) means the effects (on the body) which take place after short exposure to a substance.

Alberta Occupational Health and Safety Act states employers' and workers' fundamental responsibilities for health and safety at workplaces in Alberta. The authorities of the Alberta government to enforce these responsibilities are also found in the Act. The details of employers' and workers' responsibilities are found in regulations written under the authority of the Act.

American Conference of Governmental Industrial Hygienists (ACGIH) is an international association of occupational hygienists which develops many guidelines for the practice of occupational hygiene. One of the most important of these guidelines is Threshold Limit Values and Biological Exposure Indicies. An updated version is published every year. This publication serves as the basis for occupational exposure limits in many jurisdictions around the world.

Carcinogen means a product that causes cancer in animals or humans exposed to it.

Chemical Hazards Regulation is the Alberta regulation which contains the details of employers' and workers' WHMIS responsibilities. It also contains other requirements regarding chemicals at workplaces.

Chromosomal aberration means any change (i.e., in the constituents, their arrangement, etc.) in the normal chromosomes of an organism. This is important because an organism's chromosomes contain its genes, which code for all its characteristics.

Chronic dose means a dose of test material delivered over an extended period of time.

Chronic exposure is exposure to a low concentration of a substance over an extended period of time.

Chronic toxic effects (chronic toxicity) means effects that occur either after chronic exposure (cumulative toxic effects) or that occur a long time after the exposure.

Coefficient of water/oil distribution is the ratio of a product's distribution between the water and oil portions of a mixture of water and oil. Its technical name is "water-octanol coefficient," because the test is done with n-octanol. A value of less than 1 indicates that the product is more soluble in oils. A value of greater than 1 indicates that the product is more soluble in water.

Complex mixture "means a mixture that is a combination of many chemicals, has a commonly known generic name and is:
a) naturally occurring;
b) a fraction of a naturally-occurring mixture that results from a separation process; or
c) a modification of a naturally-occurring mixture or a modification of a fraction of a naturally-occurring mixture that results from a chemical modification process "(CPR, Section 2).

Condensation is a type of chemical reaction in which water is formed as a by-product.

Corrosion means the production of irreversible tissue damage at the site of contact.

Cumulative toxic effects are effects (on the body) which occur after long exposure to (usually small amounts of) a substance.

Decomposition is the breakdown of a product into two or more different products.

Edema means the accumulation of fluid in tissue i.e.swelling.

Embryotoxin means a product that causes toxic effects in the fetus but not in the pregnant female.

Erythema refers to patches of reddened, bumpy skin.

Flash Point means the lowest temperature at which a material gives off enough vapour that the vapour catches fire when exposed to a source of ignition. Flash points vary according to the test method used. The proper test method to be used for determining a product's flash point is determined by the product's viscosity.

Gauge Pressure means the pressure of a product in its container. The gauge pressure is actually the amount by which the pressure in the vessel is greater or less than atmospheric pressure.

Hazard Information is all information on the safe use, storage, and handling of a controlled product, including toxicological information.

Irritation means the production of reversible inflammatory changes in the skin or eyes following contact with a substance.

Laboratory, in WHMIS, means any location where samples are taken and analyzed.

LC_{50} means means "Lethal Concentration 50". This is the unit for measuring the acute toxicity of chemicals that are inhaled. It represents the amount of a chemical which will cause death in 50% of a group of test animals. LC_{50} values are usually expressed as ppm (parts of chemical per million parts of air) or mg/m^3 (milligrams of chemical per cubic meter of air). They vary with the species of animal and duration of exposure: you can expect to see this information in brackets behind the LC_{50} value, for example LC_{50} = 2 ppm (mouse, 4 weeks).

LD_{50} means "Lethal Dose 50." This is the unit for measuring acute toxicity of chemicals that enter the body by any route other than inhalation, eg. through ingestion or skin absorption. It represents the amount of a chemical which will cause death in 50% of a group of test animals. LD_{50} values are usually expressed in mg/kg (milligrams of chemical per kilogram of animal body weight). They vary with the animal species, the route of exposure, and duration of exposure: you can expect to see this information in brackets behind the LD_{50} value, for example LD_{50}=5 mg/kg (rat, oral, 8 weeks).

Lower Explosive Limit (LEL) or **Lower Flammable Limit** (LFL) is the lowest concentration of a substance in air which will explode when it is exposed to a source of ignition. At concentrations lower than the LEL, the mixture is "too lean" to explode or catch fire. The LEL is the same as the LFL.

Mutagen means a product that causes mutations in living cells. Mutations can occur in germ cells (ova and sperm) or somatic (body) cells. Germ cell mutations can be transmitted to future generations, sometimes as genetic disorders. Mutations to somatic cells affect only the person who was exposed.

Necrosis means death of cells that are surrounded by living cells.

Normal Atmospheric Pressure is the pressure at sea level. It is usually expressed as 1 atmosphere, 14.7 psi, 101.3 kPa, or 760 millimeters of mercury.

Occupational Exposure Limit (OEL) means the maximum concentrations of airborne chemicals to which workers may be exposed. Occupational exposure limits for 8-hour exposures, 15 minute exposures, and instantaneous (ceiling) exposures are specified in the Chemical Hazards Regulation.

Odour Threshold is the lowest concentration of a substance in air at which most people can smell it.

Organic Peroxide is a particular type of chemical. It is a very powerful oxidizer, highly self-reactive if heated or shocked, and very irritating to skin, eyes, throat and respiratory tract.

Oxidizing Material means any material that can give up oxygen or any chemical equivalent so that oxidation (combustion) of organic matter is stimulated. These materials are incompatible with flammable substances.

Polymerization refers to the combination of simple molecules to form large chain-like macro-molecules. This reaction can sometimes be observed as the "hardening" of a non-inhibited liquid product.

Prohibited Products are products that may not be sold, advertised or distributed in Canada. These products are dealt with in Part I of the *Hazardous Products Act*. They are not involved in WHMIS.

Reproductive Toxin means a product that effects the capability of a mammal (male or female) to produce offspring.

Restricted Products are products that may be sold, advertised or distributed only if they are labelled in a particular way. They are dealt with in Part I of the *Hazardous Products Act*.

Sale (of a controlled product) includes "offer for sale", "expose for sale" or "distribute".

Saturated Vapour Concentration is the maximum concentration of a vapour that can exist in air before it begins to condense to the liquid form. Saturated vapour concentration is measured in ppm or mg/m^3.

Sensitization is a phenomenon in which a chemical causes no apparent reaction the first time a person is exposed to it but causes one of a variety of immunologically-mediated effects on second or subsequent exposures. Different sensitizers cause different types of sensitization. The effects may be as minor as a slight irritation of the skin or as profound as severe respiratory distress.

Specific Gravity means the weight of a substance compared to the weight of an equal volume of water.

Subchronic Dose is a dose delivered over an extended period of time but not as long as a chronic dose.

Sublimation is the direct production of vapour from a solid.

Synergism is the phenomenon involving the simultaneous effects of exposure to two substances. Synergistic effects are greater than the sum of the effects caused by the two individual substances alone.

Teratogen means a substance that causes birth defects to a fetus (but not to the pregnant female) when the female is exposed to it.

Threshold Limit Values (TLVs) are airborne concentrations of substances. TLVs represent conditions under which it is believed that nearly all workers may be exposed day after day, without suffering adverse effects. This term was developed by ACGIH.

Toxicity is a basic property of a substance. It is the substance's ability to cause adverse effects in persons who are exposed to it.

Transportation of Dangerous Goods (TDG) legislation controls the conditions under which dangerous materials may be transported on public roads, in the air, by rail, or by ship. Its purpose is to protect the health and safety of persons in the vicinity of transport accidents involving those materials.

Upper Explosive Limit (UEL) or **Upper Flammable Limit (UFL)** is the greatest concentration of a substance in air that will explode when it is exposed to a source of ignition. At concentrations greater than the UEL, the mixture it "too rich" to explode or catch fire. The UEL is the same as the UFL.

Vapour Density means the weight of a vapour or gas compared to the weight of an equal volume of air.

Vapour Pressure is the pressure exerted by the vapour formed over a liquid in a closed container, under standard test conditions, reported as an absolute pressure. Vapour pressure increases as temperature increases until the critical temperature is reached.

Viscosity is the ability of a liquid to resist flow i.e. the liquid's "thickness." Viscosity is determined according to American Society of Testing of Materials (ASTM) Standard D4359. It is measured in square millimeters per second (mm^2/s) or Saybolt Universal Seconds (SUS).

Alberta Human Resources and Employment

For assistance interpreting WHMIS legislation, or with other occupational health and safety matters, contact the Alberta Human Resources and Employment, Workplace Health and Safety office nearest you:

North:

3rd Floor, Provincial Building
10320-99 Street
Grande Prairie, AB T8V 6T4
Phone: (780) 538-5249
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2nd Floor, Provincial Building
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